APPENDIX 1

ENVIRONMENTAL ASSESSMENT

FOR IMPLEMENTATION OF AN INTEGRATED NATURAL RESOURCE MANAGEMENT PLAN FORT GREELY

DEPARTMENT OF THE ARMY
UNITED STATES ARMY ALASKA (USARAK)

ENVIRONMENTAL ASSESSMENT

FOR IMPLEMENTATION OF AN INTEGRATED NATURAL RESOURCE MANAGEMENT PLAN FORT GREELY

NOVEMBER 1999

ENVIRONMENTAL ASSESSMENT

INTEGRATED NATURAL RESOURCES MANAGEMENT PLAN

U.S. ARMY ALASKA

FORT GREELY

1.0 PURPOSE OF AND NEED FOR ACTION

1.1 Need for Action

U.S. Army Alaska is committed to the stewardship responsibility it has for its training lands. These lands are critical to fulfilling the Army's military mission and they are important to the environmental health of Alaska. The Integrated Natural Resources Management Plan (INRMP) focuses on sustaining the natural resources of Fort Greely's training lands for use by future generations of soldiers, Alaskans, and Americans.

The INRMP is U.S. Army Alaska's plan of action for the care and wise use of lands entrusted to them. The plan covers a five-year period, but the philosophy behind it spans a much longer period of time. By implementing the plan, U.S. Army Alaska will conserve Fort Greely's biological diversity and make sound decisions regarding the use of renewable natural resources to support both the military mission and the needs of the region.

1.2 Proposed Action

U.S. Army Alaska proposes to fully implement its Integrated Natural Resources Management Plan 1998-2002 at Fort Greely, Alaska.

The purpose of this study is to identify and evaluate environmental consequences of implementing the proposed plan, in accordance with the National Environmental Policy Act (NEPA), the Council on Environmental Quality Implementing Regulations, and Army Regulation (AR) 200-2, *Environmental Effects of Army Actions.*

AR 200-2 is the regulation the Army uses to establish policy, procedures, and responsibilities for assessing environmental effects of Army actions. AR 200-2 specifically states that development of a natural resources management plan requires preparation of an Environmental Assessment.

1.3 Interagency and Public Coordination

The analysis process involved the review of installation natural resources-related data collected by USARAK, other governmental agencies, and private organizations. The process included interviews with USARAK personnel involved with natural resources management, military training planning, and installation maintenance.

The process also involved interviews with outside agency personnel (state and federal) who have responsibilities, interests, and/or expertise regarding natural resources management on Fort Greely. The Bureau of Land Management, U.S. Fish and Wildlife Service, and Alaska Department of Fish and Game are signatory partners in implementation of the INRMP. Chapter 7.0 lists all agencies contacted.

A public meeting was held on June 26, 1996 to explain the INRMP planning process as well as invite public comment. No one attended the meeting. No comments on either the Fort Greely natural resources program or proposed contents for the INRMP were offered.

1.4 Decision to be Made

USARAK must implement an Integrated Natural Resource Management Plan at Fort Greely to manage natural resources, support the military mission, mitigate environmental effects of the overall military mission, and comply with various environmental laws. Full implementation of the 1998-2002 INRMP will ensure the continued use of Fort Greely natural resources for military training and outdoor recreation.

Implementing the Fort Greely INRMP would result in no significant detrimental impacts to existing environmental systems. There would be beneficial consequences to this plan, such as reducing impacts to soil, water, and biological resources, thereby avoiding violations of federal and state laws, including the Sikes Act, Clean Water Act, and NEPA. This implementation would allow the Army to manage the natural resources at Fort Greely in a proactive manner to meet current and future conservation needs.

Implementing the plan would not constitute a major federal action significantly affecting the quality of the environment. A Finding of No Significant Impact should be published.

1.5 Regulatory Requirements

This Environmental Assessment was prepared in accordance with the National Environmental Policy Act (NEPA), the Council on Environmental Quality Implementing Regulations, and Army Regulation (AR) 200-2, *Environmental Effects of Army Actions.* Federal and state laws and regulations which govern implementation of the proposed action are listed in Appendix 20 of the Fort Greely INRMP.

2.0 ALTERNATIVES INCLUDING THE PROPOSED ACTION

2.1 Military Mission

The primary military mission of Fort Greely and USARAK following the Cold War is peacetime deployment to support U.S. interests worldwide, the defense of Alaska, and the coordination of Army National Guard and Reserve activities in the state. Fort Greely's lands are used for testing and evaluation of weapons and equipment under conditions of extreme cold, training forces for action in Arctic and subarctic regions in the event of war, and for infantry training.

The Cold Regions Test Center (CRTC) is responsible for testing troops, materiel, and equipment under conditions of extreme cold. The CRTC is charged with planning, conducting, and reporting on environmental phases of development tests, and providing advice and guidance on test and evaluation matters to materiel producers, the other armed services, and private industry. During winter months many ranges are used by the CRTC on a 24-hour per day basis.

The Northern Warfare Training Center (NWTC) is responsible for training forces for action in Arctic and subarctic regions. The NWTC trains Arctic and mountaineering units in winter and summer conditions, maintaining and improving state-of-the-art of mountain and northern operations for the U.S. Army. The NWTC conducts high-altitude search and rescue missions, tests and evaluates mountaineering techniques and equipment, and trains and equips the Army Mountaineering Team (AMT).

The Gerstle River Test Site was used by the Cold Regions Test Center for testing chemical, biological, and conventional munitions. In the early 1980s primary use was assumed by the NWTC for a variety of training, including a biathlon course and a Forward Arming and Refueling Point for aviation units. In 1988 the Site came under control of the newly created Range Control, DPTSM.

The East Training Area is used primarily as a nonfiring maneuver area. The West Training Area is used as a test site for weapons and equipment, including experimental designs, under conditions of extreme cold. Some vehicle testing, including tracked and wheeled vehicles, also takes place on the West Training Area. Battalion-size and larger elements train at Fort Greely throughout the year. Training exercises may include deployment of troops by truck and helicopter, field bivouac for days, and construction of temporary fighting/defensive positions. Exercises typically entail approach marches, weapons firing, and infantry tactical maneuvers.

Fort Greely is also used for annual joint readiness exercises. These typically involve 10,000-14,000 troops for division-level exercises and 3,000-5,000 for brigade-level exercises. In recent years, division-level training has occurred in summer instead of winter. Brigade-level training has recently been in December. These exercises involve other Alaska installations, but the main battlefield for these exercises has been on Fort Greely.

Effects of past and present military activities on natural resources are discussed in the INRMP. It is difficult to quantify effects of future military missions on natural resources at Fort Greely due to the uncertainty involved with military training in Alaska. If the mission remains unchanged, mission impacts on natural resources will remain similar to those today. Ongoing BRAC actions should not affect the conduct of the military mission. Training range activities and cold region testing will continue at current levels on Fort Greely (USARPAC, 1996).

Changes in facilities that would affect natural resources will be determined by changes in the military mission. At this time there is only one new facility planned, a General Purpose Ammunition Magazine at Bolio Lake (HQ, USARPAC, 1996). This is not likely to have a significant effect on natural resources on Fort Greely.

2.1.1 Base Realignment and Closure

Fort Greely was designated by Congress to be realigned under BRAC-95. About 1,800 acres of Main Post potentially will be transferred when BRAC becomes final in July 2001. This acreage contains most buildings on Fort Greely. The end result of the BRAC process will be the movement of the Cold Region Test Center and the Northern Warfare Training Center to Fort Wainwright, (HQ, USARPAC, 1996). Primary implementation of the INRMP has become a Fort Wainwright responsibility.

2.2 Alternatives

2.2.1 Fully Implement INRMP Alternative

Under this alternative, USARAK proposes to fully implement the INRMP as mitigation for environmental effects of the military mission. The INRMP presents information on the management of natural resources on Fort Greely. The plan describes the setting; defines land management units; and, in general, ways these units will be managed to sustain ecological functions, protect sensitive and other nongame species,

provide sustained military training, and provide outdoor recreation uses. The proposed action includes full implementation of the ITAM program. Major emphasis will be placed on proactive management to reduce the potential for negative environmental impacts due to Fort Greely's military mission.

The INRMP describes and implements an integrated approach to managing natural resources on Fort Greely for the period of 1998 through 2002. The INRMP identifies general goals and specific objectives regarding the management of Fort Greely's natural resources and policies to accomplish these goals.

The INRMP includes plans for inventory and monitoring of flora, fauna, and water quality, as well as implementation of a geographic information system and general data storage/analysis capabilities. Prevention of damage and protection programs include implementation of programs to prevent and suppress wildfires, minimization of forest disease and pest impacts, and means to protect wetlands, areas of special significance, and cultural resources sites.

Direct management of natural resources includes forest ecosystem management and wildlife habitat management (wildlife clearings, bison habitat enhancement, prescribed burning, and lake habitat improvements). Game harvest management strategies are described. Management specifically for predators and other nongame species is identified. Fish harvest and stocking programs are described. Erosion control, wetlands protection, and water quality protection programs are identified. Pest management programs are outlined, emphasizing natural resources implications.

The Integrated Training Area Management (ITAM) program includes a Land Condition Trend Analysis component to survey and monitor the condition of the land and its vegetation; an Environmental Awareness component to instill a conservation ethic in military personnel and others using Fort Greely; use of a Geographic Information System to make land use decisions using computer generated spatial data; a Land Rehabilitation and Maintenance component to repair damaged land, reduce erosion, and minimize future damage; and a Training Requirements Integration component to integrate training with the capacity of the land to support military use. All components will be operational during 1998-2002.

External assistance for natural resources programs is identified and prioritized. Natural resources-oriented law enforcement issues and operations are outlined. Conservation education and other awareness programs are identified. Provisions for range access are identified, including liberal public access. Outdoor recreation programs including hunting, fishing, trapping, camping, off-road vehicle operation, and picnicking are described.

The INRMP provides means to protect cultural resources during implementation of the natural resources program. The INRMP identifies means to implement NEPA on Fort Greely to provide consideration for natural and cultural resources during planning of USARAK construction projects, military operations, natural resources management, and maintenance operations. Federal laws, executive orders, Department of Defense directives, and Department of Army regulations potentially pertinent to natural resources management on Fort Greely are identified.

USARAK realizes that some aspects of the INRMP are less specific than others. USARAK has committed in the INRMP to develop more specific activity plans during the next five years:

- Habitat Management Plan
- Wildlife Inventory and Monitoring Plan
- Wetland Management Plan
- Watchable Wildlife Plan
- Forest Management Plan

- Special Interest Areas Conservation Plan
- Outdoor Recreation Management Plan
- ITAM Activity Plan
- Fire Management Plan
- Erosion Control Plan

The INRMP includes programs, projects, or actions that are listed in three priority categories (high priority, important, and lesser important projects/programs). Organization, manpower, personnel training, funding, and command support needed to implement this INRMP is discussed.

2.2.2 Partial Implementation Alternative

This alternative would implement portions of the INRMP. There is a wide range of options involved with this alternative, ranging from implementation of some features of each major program to implementation of some major programs but not others. Such actions would emphasize reacting to identified problems and noncompliance as opposed to the proactive approach of the total INRMP.

2.2.3 Other Management Options Alternative

Virtually every major natural resources program at Fort Greely (forestry, fish and wildlife, Integrated Training Area Management, pest management, wetlands, etc.) has many options different from ones selected for the INRMP. For example, there are different strategies for moose, bison, and wolf management, just as there are different options for managing fisheries, and a variety of forest management options. Many of these interact with each other. For example, changing the forest management program would impact upon moose management and the ecosystem as a whole, just as changing the fire management program would impact many species.

Options possible within this alternative create literally thousands of possible combinations, each of which could be an alternative to the proposed action. Various laws, compliance documents, Army regulations, etc. prohibit the implementation of many of these possibilities. Major timber harvest is not a viable option due to limited markets. On the other hand, the extent of bison and moose habitat improvements has many choices. The same would be true of changing the monitoring program for land condition trends.

2.2.4 No Action Alternative

The no action alternative would not implement an INRMP for Fort Greely. A wide variety of laws and executive orders on wildlife, water quality, federal land management, outdoor recreation, wetlands, etc., as well as Department of Defense and Department of Army policies require natural resources management and implementation of an INRMP.

2.3 Identification of the Preferred Alternative

The Army’s preferred alternative is to fully implement the Integrated Natural Resources Management Plan for 1998-2002 on Fort Greely.

3.0 AFFECTED ENVIRONMENT

3.1 Setting

Fort Greely is 107 road miles southeast of Fairbanks and six miles south of the junction of Alaska and Richardson highways, southwest of Delta Junction. The post lies within the central valley and hill area, bordered by the Brooks Mountain Range to the north and the Alaska Range to the south (Anonymous, 1995a). The entire region lies within the Tanana River valley. The Delta River flows northward through the eastern portion of the West Training Area. Map 2-1 within the INRMP shows the general location of Fort Greely and its main subdivisions.

Fort Greely consists of the Main Post (14,900 acres), the East Training Area (51,590 acres) and West Training Area (571,995 acres), and three outlying sites in the area, Gerstle River Test Site (19,000 acres), Black Rapids Training Site (2,779 acres), and Whistler Creek Rock Climbing Area (498 acres).

3.1.1 Satellite Installations

Fort Greely is a satellite installation of Fort Richardson, headquarters of U.S. Army, Alaska (USARAK). The Fort Greely natural resources program is managed in conjunction with the Fort Wainwright program, and all three installations are the responsibility of U.S. Army Alaska. Fort Richardson and Fort Wainwright each have their own INRMPs.

Ongoing Base Realignment and Closure (BRAC) actions has resulted in Fort Greely becoming a satellite of Fort Wainwright as far as natural resources management is concerned. USARAK personnel at Fort Wainwright directly administer much of the activity at Fort Greely, including natural resources management. The realignment of Fort Greely will not significantly affect implementation of this INRMP since only the cantonment area is affected at Fort Greely.

3.1.2 Neighbors

Fort Greely is separated from Delta Junction by Jarvis Creek. Delta Junction is the largest community in the area, with 652 residents in 1990 (compared to 703 in 1970) (BLM and U.S. Army, 1994). Fort Greely employs about 40% of the local work force (HQ, USARPAC, 1996). The civilian population of the region has been declining for many years, and considering that Fort Greely is the largest employer in the area, this trend is likely to be accelerated with ongoing Base Realignment And Closure (BRAC) actions. Chances of development approaching the Fort Greely boundary are remote. The East and West Training Areas, and Gerstle River Test Site are isolated from encroachment, except for remote homesteads.

Other developed areas include Big Delta to the north and the Clearwater farming/ranching area to the east. In addition to the Alaska and Richardson highways, the Trans Alaska Pipeline crosses parts of Fort Greely. The pipeline generally parallels Richardson Highway, but above and below- ground sections are on the Fort Greely West Training Area.

3.2 Climate

Fort Greely has the northern continental climate of interior Alaska, characterized by short, moderate summers; long, cold winters; and low precipitation and humidity. Weather is influenced by mountain ranges on three sides that form an effective barrier to the flow of warm, moist maritime air during most of the year. Surrounding upland areas tend to aid drainage and the settling of cold Arctic air into Tanana Valley lowlands.

The Alaska Meteorological Team (AMT), Central Meteorological Observatory, Fort Greely monitors weather on the post to support Cold Regions Test Center projects. Average monthly temperatures range

from -6.4°F in January to 60.0°F in July, with an average annual temperature of 27.4°F. The record low temperature is -63°F, and the record high is 92°F. The average frost-free period is 95-100 days (27 years of AMT data).

Prevailing winds are from the east-southeast from September through March and from the west, southwest, or south during April through August. Average wind velocity is 8.2 miles per hour (mph). The greatest wind speeds occur during winter, with a high of 104 mph recorded in February. Winds are 5 mph or less only 13.6% of the time, and wind speeds greater than 60 mph have been recorded in every month. Thunderstorms are infrequent, occurring only during summer (20 years of AMT data).

Average annual precipitation is 11.12 inches on an average of 90.4 days annually, most falling during summer and early fall. Average monthly precipitation ranges from a low of 0.24 inches in April to a high of 2.38 inches in June. Average annual snowfall is 40.5 inches, and the record is 99.7 inches in 1945 (27 years of AMT data).

Average annual relative humidity is 55% with lowest levels during spring and early summer (38 percent during mid-afternoon in May). Heavy fog is relatively common during December and January, with three or more foggy days each month. Temperature inversions can be pronounced in the Delta Junction area, especially when temperatures drop below -25°F. Ice fog can be expected anytime temperatures drop to -30°F or lower, but is ordinarily restricted to areas near human settlements where moisture is exhausted by burning fuels (Anonymous, 1979).

3.3 Geology

While central Alaska was not glaciated, glaciers surrounded the area during glacial advances. Climatic fluctuations during the Quaternary Period caused glacial expansion and recession (Racine and Walters, 1991). Rivers flowing from glaciers deposited several hundred feet of silt, sand, and gravel in the Tanana and Yukon valleys. Most northern portions of Fort Greely are composed of these Quaternary deposits. Bedrock of the Northern Foothills is characterized by a complex assemblage of Precambrian and Paleozoic-age metamorphic rocks of the Yukon-Tanana crystalline complex (formerly known as Birch Creek schist). These rocks were later intruded by Cretaceous and Tertiary-age igneous rocks, resulting in a few exposed areas of granite and quartz diorite (Anonymous, 1979).

Even though seismic activity in Alaska exceeds that found in any other state, few shocks have caused severe damage because of the absence of large populations centers. Fort Greely lies in a 200-mile wide seismic zone that extends from Fairbanks southward through the Kenai Peninsula. Since the 1960s, several minor seismic events occurred on the East and West Training Areas. There is no record of damage sustained from any of these events. The Denali Fault extends through the Alaska Range just south of the installation (Anonymous, 1979).

3.4 Petroleum and Minerals

Petroleum and mineral rights management on East and West Training Areas of Fort Greely is the responsibility of the Bureau of Land Management (BLM). Many glacial deposits in the area are good sources of sand and gravel for aggregate or base course materials. They were used for construction of the Richardson and Alaska highways and the Trans Alaska Pipeline.

A gold and molybdenum deposit was reported in 1942 along Ptarmigan Creek in the southwestern portion of the West Training Area. Ore was mined from this deposit but never shipped. Other deposits of gold, lead, and tin have been reported in areas surrounding the post (BLM and U.S. Army, 1994). Portions of the Training Areas have moderate to high potential for placer gold deposits. Localized placer deposits may also occur in streams draining the granites and Tertiary-age gravel benches (CEMML, 1998).

The Jarvis Creek coal field is located southeast of the East Training Area. Coal resources in this area are estimated at 76 million tons, two-thirds at depths less than 1,000 feet. A few hundred tons of coal was produced from one small mine in the Jarvis Creek field in 1958. The mine provided all coal requirements at Fort Wainwright and Eielson Air Force Base for at least one year and was active from 1966 to 1972 (Anonymous, 1979).

Four areas of Fort Greely are described in the *Resources Management Plan/Final Environmental Impact Statement* as having mineral potentials. The Middle Tanana Basin occupies the northern and northeastern strip, approximately 30% of the post; the Nenana Coal Basin occupies the southern and southwestern portions, about 40% of Fort Greely; a Nonbasin Area occupies a strip between the Middle Tanana Basin and the Nenana Coal Basin, about 20% of the post; and igneous/metamorphic rock outcrops occupy two areas in the southwestern corner of the post (BLM and U.S. Army, 1994).

Other coal fields are scattered throughout the Nenana Coal Basin. The Basin has a high potential for coal; the central Nonbasin Area has low potential; the northern Middle Tanana Basin has moderate potential; and the outcrops have no potential (BLM and U.S. Army, 1994). The potential of finding economic deposits of Tertiary coal on Fort Greely is unknown due to poor outcrops, a lack of subsurface information, the extensive erosion of Tertiary sediments, and structural deformation of the bedrock (CEMML, 1998).

Coal and organics within the Tertiary sediments could generate and trap gas under suitable geologic conditions. The Nenana Basin, with its known coal deposits, has moderate potential for producing gas (CEMML, 1998).

Granitic plutons occur near the eastern and western borders of Fort Greely. These features are associated with thermal springs elsewhere in Alaska. Therefore, Fort Greely is classified as having moderate potential for geothermal resources (BLM and U.S. Army, 1994).

The rock outcrops have no potential for phosphate, sodium, potassium, or gilsonite, while other areas have low potential for these minerals.

The Fort Greely Resources Management Plan (BLM and U.S. Army, 1994) prohibits mining in drop zones and landing fields, and within one mile of existing roads and major trails to maintain safe military operations and training. Mineral material sites are an exception to the one-mile off-limits designation. The military may use sand and gravel for its own purposes.

Measures to safeguard resource values outlined in 43 CFR 3100, 43 CFR 3600, and 43 CFR 3809 apply to mineral development on withdrawn lands. Under terms of the Military Lands Withdrawal Act of 1986, withdrawn lands opened to mineral location would convey title to locatable minerals only. These patents would also carry the right to use as much of the surface as necessary for mining under guidelines established by the Secretary of the Interior by regulation (BLM and U.S. Army, 1994).

The East and West Training Areas are exempt from provisions of the Mining Law of 1872; the Mineral Leasing Act of 1920, as amended; the Mineral Leasing Act for Acquired Lands of 1947; and the Geothermal Steam Act of 1970. The withdrawals are closed to all forms of mineral material disposal, both sale and free use, other than to support military activities.

3.5 Soils

There is no comprehensive soil survey for Fort Greely with exception of areas near the cantonment area. The INRMP discusses plans for conducting a soil survey.

In general, soils have been derived from glacial action and modified by streams and discontinuous permafrost. The Natural Resources Conservation Service (then the Soil Conservation Service) identified 12 soil

associations in the area of Fort Greely. The northern, west-central, and eastern portions of the West Training Area are silt loam associations, while the East Training Area is predominantly shallow silt loam over gravely sand. River flood plains consist of alternate layers of sand, silt loam, and gravely sand. Muskeg soils are characterized by wet soils that are highly organic with a high water table, or are underlain by permafrost. Upland foothills have moist loamy soils, while mountain soils are rocky, steep, and unvegetated. Lowland soils have moderate erosion potential, while foothill soils have moderate to high erosion potential (Anonymous, 1979).

Permafrost is a major factor determining distribution of vegetation and human activities. Permafrost is defined as any ground that remains at or below freezing continuously for more than two years. Ice may or may not be present. Permafrost is defined in seven categories in order of increasing ice content. The propensity for subsidence and frost action is proportional to the silt content of the soil.

Any activity that removes the insulating vegetation mat or destroys the active layer above the permafrost table results in the melting of the ice mass and irregular subsidence. Once started, the thawing process is difficult to control. This process could, for example, result from maneuver or construction activities. The preferred method for land development on permafrost is to clear the land of vegetation and leave it undeveloped for a year to allow the ice to melt. Sites should have the lowest possible ice content, and steps should be taken to ensure adequate ground insulation (Nakata Planning Group, 1987).

3.6 Surface Water

Fort Greely's surface waters are diverse and include numerous rivers, streams, ponds, and lakes. Map 7-6a within the INRMP indicates surface drainage on Fort Greely.

Fort Greely lies entirely within the Tanana River drainage basin. The Main Post drains into the Delta River. The West Training Area drains into the Delta River, Delta Creek, East Fork of Little Delta River, Buchanan Creek, and the Little Delta River, among others. The Delta River, Delta Creek, and Little Delta River all drain directly into the Tanana River. The East Training Area drains into Granite, Ober, and Jarvis creeks. Main Post drains into Jarvis Creek. The Gerstle River Test Site drains into the Gerstle River and Sawmill Creek, both of which drain into the Tanana River.

Most rivers, steams, and creeks are fed by glaciers that lie on or just south of the installation's southern boundary. The Delta River, Delta Creek, and Little Delta River are fed by melt waters from the Alaska Range. Principal glaciers include: Canwell, Castner, and Black Rapids (Delta River); Trident and Hayes (Delta Creek); and Hayes and Gillam (Little Delta River). Jarvis Creek is fed by melt water from glaciers of Mt. Silvertip (Anonymous, 1979).

Volume of flow fluctuates dramatically by season. During the long period of freeze, usually October to May, flow is limited to seepage of groundwater from aquifers into streams. Many small streams freeze solid (zero discharge) during winter. Snowmelt typically begins in May and reaches its peak in June. Flow is greatest during June and July. After July, most of the snow has melted, and a steady flow during August and September is sustained by rainfall.

None of the streams on Fort Greely have been designated by the state of Alaska into water-use categories. Without such designations, fresh waters in Alaska are considered to be in their original and natural condition and suitable to serve all uses. Measured pH levels from Delta River and Jarvis Creek are slightly alkaline, but within limits established by the state. Dissolved oxygen levels generally reflect water flow; oxygen levels are highest in June, July, and August, but may approach zero during periods of prolonged ice cover (Bonito, 1980; Anonymous, 1979).

Lakes are abundant on Fort Greely, but information on their water quality is scarce. Water samples collected from Bolio Lake had a pH of 8.8 to 9.2, a level beyond acceptable alkalinity as defined by the

state. Most nitrogen in Bolio Lake is in organic forms (0.98 mg/l) with low concentrations of nitrates and nitrate nitrogen (0.02 mg/l). Samples collected from Bolio Lake in August 1975, had dissolved oxygen concentrations of 9.8 mg/l near the surface and 10.0 mg/l at a depth of 15 feet.

Fifteen lakes are stocked by ADF&G. Most others are not suitable for fish, due to accessibility and/or susceptibility to freezing. Bolio Lake is stocked and is susceptible to freezing, but it only occurs on an average of one in 10 years.

3.7 Groundwater Resources

Although surface water is abundant in the Tanana Basin, most water requirements are met by wells. Groundwater supply potential is greatest in the flood plain alluvium along Little Delta River, Delta River, Delta Creek, and Jarvis Creek, and in alluvial fans extending along the northern flanks of the Alaska Range. Depth to groundwater at Fort Greely is between 100 and 210 feet. Most wells on the post tap unconfined aquifers found in unconsolidated alluvial deposits. Groundwater recharge is primarily from influent seepage of glacier-fed streams.

3.7.1 Water Supply

Old Post, Mid-Post, and Main Post of Fort Greely are served by independent water systems. Most of the Old Post system has been abandoned. By 1969 all that remained of the Mid-Post water system was a 100,00 gallon storage tank, two wells, two 3,000-gallon pressure tanks, and distribution lines to three active buildings. The Main Post water system was installed in 1954. The two primary wells are numbers 8 and 9, and an 188,000-gallon storage reservoir is housed in Building 606.

3.8 Vegetation

Fort Greely has five recognized vegetation types: ice and snow; alpine tundra; moist tundra; open, low growing spruce forests; and closed spruce-hardwood forests. The white spruce-paper birch forest of interior Alaska is often called the boreal forest or taiga. Vegetation types of interior Alaska form a mosaic and reflect fire history, slope and aspect, and presence or absence of permafrost (Viereck and Little, 1972).

Huge landscapes on Fort Greely encompass a wide array of physiographic settings. Patterns of vegetation are determined by a variety of natural influences including climate, topography (slope, aspect, and elevation), glaciation, flooding, depth to water table, and most importantly, permafrost and fire. A typical vegetation profile from the north slope to the Tanana River flood plain includes the following: barren (rock, gravel, snow, and/or ice), alpine tundra, moist tundra, high brush, forests (black spruce, white spruce, deciduous, and mixed), high brush, barren, and water (Anonymous, 1979; Bonito, 1980). This vegetation profile does not precisely match Viereck and Little's (1972) vegetation types which were on a statewide scale. Wetlands occur at various altitudes and sometimes only during early successional stages. Localized conditions often result in combinations of these types, or the absence of a type of vegetation type when moving up or downslope. Each is described below:

Barren Land. Barren ecosystems include glaciers, snowfields, bare and exposed rock in mountains, and recently deposited gravel bars in rivers. A small portion of Trident Glacier occurs on Fort Greely. All barren land on Fort Greely occurs either at high altitudes or adjacent to rivers and streams.

Tundra (Alpine and Moist). Windy and cold tundra is above tree line, supporting only the hardiest vegetation within a short growing season. Vegetation in alpine and moist tundra is a low, dwarf, or procumbent growth form and is limited by severe weather. Vegetation in ecotones between alpine and moist tundra exhibit vegetation found in both types, including sparse and scattered grasses, dry land sedges, lichens, club mosses, and low mat-forming herbaceous and woody plants. Woody perennials rarely

exceed three feet in height. This ecosystem is extremely sensitive to damage. In southern portions of Fort Greely, moist tundra grades into alpine tundra and then into glaciers (barren land).

High Brush. The high brush ecosystem is a transitional zone, or ecotone, between forests and barren areas or tundra, and at lower elevations, between forests and barren ground adjacent waterways. High brush normally consists of a narrow vegetative band along flood plains or just above tree line. The size of the transitional zone varies dramatically, and in places where there is a well-defined tree line, it may be quite small. The high brush area, however small, is important ecologically. It sustains small to medium-sized woody plants, shrubs, and bushes (no larger than 20 feet in height). These include alder, willows, cottonwood, birch, mountain ash, and prostrate white spruce. Along flood plains, high brush forms a thick, almost impenetrable, barrier with little to no ground cover. In sub-alpine settings, stands may be thinner and more persistent. Ground vegetation consists of grasses, mosses, berries, and lichens that often form thick layers. A mixture of wildlife from alpine and forested communities use high brush. The high brush ecosystem is particularly important for moose forage (Bonito, 1980).

Forest. Forests of Fort Greely range from pure stands of spruce or hardwoods to spruce/hardwood mixtures. Predominate hardwoods are birch, quaking aspen, and balsam poplar. Aspen is found on southern exposures, while birch is found on northeastern and northwestern slopes. Bottomland white spruce/balsam poplar forest occurs on level flood plains, low river terraces, and south slopes. Black spruce stands occur where drainage is poor, such as flat valley bottoms, lakesides, and muskegs. Lowland black spruce/hardwood forest is the most common type in interior Alaska. On Fort Greely, at least one-third of the lowland north of the Alaska Range is lowland black spruce forest. On colder northern aspects, black spruce stands may reach 2,500 feet in elevation.

Wetland. Wetland take a variety of forms, but are mostly shrub wetlands on Fort Greely. Shrub wetlands, also known as bogs or low brush, are associated with the slightly higher relief of marsh edges and in poorly-drained basins and depressions with cold, waterlogged soils. The surface primarily consists of a thick layer of peat over a mottled gray silt or silt loam. The water table, if not exposed, is found only a few inches beneath the surface, and during periods of heavy precipitation, bogs may form temporary lakes. Depth to ice-rich permafrost is often less than 30 inches. Ground cover is characterized by a dense accumulation of mosses, lichens, sedges, rushes, liverworts, mushrooms, and other fungi. Stunted black spruce occasionally occur. Along the margins of bogs and in drier areas, grasses, small shrubs, vines, and smaller trees, such as willow and dwarf Arctic birch, proliferate (Anonymous, 1979).

Interior Alaska's vegetative pattern is fire-dominated. On Fort Greely, fires are greatest on northern portions of the West Training Area. Between 1956 and 1987, 60 known fires burned over 150,000 acres in the Fort Greely/Delta Junction area. Particularly large fires included 43,500 acres east of Jarvis Creek in 1987, 35,450 acres near Delta Creek in 1971, 17,500 acres west of the East Fork of Little Delta River in 1971, and 8,000 acres in the lower One-Hundred-Mile Creek area in 1956 (BLM and U.S. Army, 1994; Bonito, 1980).

The following summary is based on a literature review by Bonito (1980). The first year after a fire, grasses, fireweed, horsetail, and morel mushrooms are common. Grasses and sedges along streams recover quickly, and birch seeds germinate by the second year. In wet muskeg, a continuous cover of grasses can usually be found within three to five years postburn. Willow, Labrador tea, and birch recover first, followed by black spruce, and perhaps 100-200 years later, spruce-dominated sites develop again into muskegs. Lichens may take 50-150 years to recover after a burn. On dry sites, willow is replaced by aspen and birch, and birch may remain for 150 years until being replaced by white spruce. Repeated burning tends to result in birch/aspen communities.

There is no comprehensive floristics inventory of Fort Greely. The INRMP (Section 12-2a(3)) discusses plans for obtaining more information on the flora of the post.

3.8.1 Threatened or Endangered, and Species of Concern Plants

Interior Alaska has no federally-listed threatened, endangered, or candidate plant species.

3.8.2 Forest Inventory

Only 27% of forests in the Tanana Valley have commercial timber potential. Mapping by the Joint Federal-State Land Use Commission indicated that about 20,800 acres of Fort Greely are covered by spruce-poplar forest. Many stands are unharvestable due to contamination by ordnance. Little commercial potential exists for the remainder because of the lack of a local mill and the restriction on exporting timber from federal lands (Anonymous, 1979).

The Tanana Chiefs Conference, Inc. conducted an inventory of forest resources on military land withdrawals within interior Alaska for the BLM (Tanana Chiefs Conference, 1993). The inventory included the Main Post area of Fort Greely, the northern periphery of the West Training Area, all of the East Training Area, and Gerstle River Test Site for a total of 391,851 acres (about 60% of the total area). Large tracts of unforested upland areas within the West Training Area were excluded from the inventory. Land cover was classified according to commercial forest potential. Other lands were classified as non-forested land, rivers, or water.

The total area determined to have commercial forest potential on Fort Greely that was inventoried was 158,487 acres or about 40%, while 54% was classified as non-forested land, 3% as rivers, and 3% as other waters. The minimum mapping unit was 15 acres. Considering areas not within the project definition, the 158,487 acres represents about 24% of Fort Greely and GRTS.

Sawtimber was defined as conifers greater than nine inches diameter at breast height (dbh) and deciduous trees greater than 11 inches dbh. Pole timber was defined as conifers 5-9 inches dbh and deciduous trees 5-11 inches dbh. The below table shows results of the inventory.

Timber Resources on Fort Greely (Tanana Chiefs Conference, 1993).

Species		Acreage	Area %	Volume*	Volume %
Sawtimber	White Spruce	1,227	2.1	12.39 mil	5.0
	Mixed White Spruce/Hardwood	328	0.5	6.068 mil	2.5
	Total Sawtimber	**1,555**	**2.6**	**18.458 million**	**7.5**
Pole Timber	White Spruce	26,640	44.7	159.839 mil	64.9
	Hardwood	13,311	22.3	7.99 mil	3.2
	Balsam Poplar	177	0.3	.249 mil	0.1
	White Spruce/Hardwood	7,523	12.6	27.08 mil	11.0
	Mixed White Spruce/Black Spruce	962	1.6	2.983 mil	1.2
	White Spruce /Balsam	2,495	4.2	14.469 mil	5.9
	Mixed Black Spruce/White Spruce/Hardwood	6,994	11.7	15.387 mil	6.2
	Total Pole Timber	**58,102**	**97.4**	**227.995 million**	**92.5**

* Board Feet

Sawtimber is a relatively small component of forest resources on Fort Greely, which significantly reduces its commercial value. In addition, 69% of white spruce pole timber is located in closed areas.

Estimated annual harvest levels were calculated using the area control method. The following assumptions were made when determining harvest levels:

- White spruce, birch, and aspen are crop species. Balsam poplar, black spruce, and tamarack are likely to remain non-merchantable in the near future.

- Regeneration of softwoods and hardwoods can be variable, but it is estimated that 10 years will be required for trees to become established and reach “free to grow” status.
- The estimated annual allowable harvest is based on present average net volumes.
- The white spruce sawtimber rotation length is 120 years, and hardwood sawtimber and fuelwood rotation length is 80 years.

Based on inventory data and above assumptions, 132 acres/year of white spruce sawtimber could be harvested from Fort Greely, yielding 177,000 cubic feet or 529,000 board feet. The estimated hardwood harvest was 219 acres/year, yielding 159,000 cubic feet or 475,410 board feet.

There is no commercial forest harvest (with the exception of one small firewood sale), pending the development of a Forest Management Plan as required by the *Fort Greely Resource Management Plan* (BLM and U.S. Army, 1994). The INRMP includes a project description for the development of a Forest Management Plan.

3.8.3 Wetland

Wetland on Fort Greely include freshwater marshes and shrub wetlands. These wetlands may or may not qualify as jurisdictional wetlands as defined in Section 404 of the Clean Water Act. Jurisdictional wetlands are determined by the Corps of Engineers on the basis of hydric soils, vegetation, and hydrology.

National Wetlands Inventory (NWI) mapping was completed in 1985 for Fort Greely. NWI results have been digitized for GIS. The NWI overlooked many smaller wetlands, making this survey inadequate for installation natural resources management programs. The INRMP describes plans to more fully delineate wetlands during the next five years.

3.9 Fauna

Due to diverse ecosystems and a relatively unobtrusive military mission, most species indigenous to central Alaska can be found on Fort Greely. Relatively little is known about animal populations or their trends. Most research has been directed towards big game animals. A list of verified species is in Appendix 8-3 of the INRMP.

3.9.1 Game and Furbearers

Fort Greely is home to the largest variety of mammalian game, furbearers, waterfowl, and upland game birds of any military area in the country (BLM and U.S. Army, 1994). Some big game species are:

Moose: Moose is the most visible and economically important wildlife species on Fort Greely. Game Management Unit 20A, which has one of the state’s largest moose harvests, includes the western portion of Fort Greely. The south central and northeastern portion of the West Training Area and the far southern portion of the East Training Area are fall concentration areas for moose. Spring and summer concentrations are found in the north central portion of the West Training Area. Winter concentrations are found in the northeastern portion of the West Training Area, as well as the northern portion of the East Training Area (Bonito, 1980). A 1984, late-fall moose survey indicated a population of 384 moose with a 20% standard deviation. A 1995 fall estimate was 700-1,100 moose on Fort Greely (Steve Dubois, ADF&G, personal communication). It is difficult to conduct meaningful moose surveys for just Fort Greely due to the migratory habits of these animals.

Bison: Bison were introduced into the Big Delta-Delta Junction area in 1928 after extirpation from the area 450-500 years ago. There are now four herds in Alaska, one at Fort Greely and the other three

originating from this herd stock. In the 1950s, the Delta bison herd had more than 500 animals; by 1973, it was estimated at 325, and in 1980, it had about 300 bison. The herd was being maintained there through strict hunting regulations. In 1994 the Delta bison herd was estimated at 446 animals with 70 bulls/100 cows and 53 calves/100 cows. When winter food sources are good, the herd has a high birth rate (70%), low calf mortality (80% survival), and generally good health. Hunting is the main mortality factor. The Delta bison herd calves (April through July) primarily in the Delta River basin along terraces and gravel bars on or near Fort Greely, in the vicinity of Texas and Washington ranges. During August through September the herd migrates north and east, onto the Texas Range and then spreads out onto the north-east corridor. During November through March, most bison move off of Fort Greely, onto the Delta-Clearwater agricultural district (Anonymous, 1979; Kiker and Fielder, 1980). DuBois (1992) summarized the history, natural history, economic status, and management plans for the Delta bison herd.

Dall Sheep: Dall sheep are found in the Molybdenum Ridge area in the southwestern portion of the West Training Area. The population was estimated at less than 100 animals (Bonito, 1980). Spiers and Heimer (1990) studied this herd and found five subpopulations. They noted that movements included lands both on and off Fort Greely. This study found 150 sheep on Fort Greely in winter and 100 in summer.

Caribou. The Delta caribou herd, one of 13 distinct herds in Alaska, ranges throughout the moist tundra habitat along the Alaska Range. This relatively small herd spends its springs and summers on calving grounds in the Trident Glacier foothills and then moves to the west of Fort Greely for the winter. ADF&G identified the southeastern area of the West Training Area as winter habitat for caribou. In 1963 the herd was estimated at 5,000 head that ranged over 3,000 square miles. By 1974 the herd dropped to 1,400-2,000 animals (Anonymous, 1979). In 1979 the herd was estimated at about 4,000 animals with a high (63/100) calf/cow ratio (Spiers, 1982). The herd is currently estimated at 4,600 animals and growing. Caribou are hunted on Fort Greely, but few are harvested because the herd is generally off Army lands during the hunting season.

Large predators include grizzly and black bears, wolves, foxes, martens, coyotes, and wolverines. Many of these species, in addition to mink, muskrat, Arctic hare, and beaver, are trapped for fur on Fort Greely. There are no accurate harvest or population data for these species.

Several small game and related species, including willow and rock ptarmigan; spruce, sharptail, and ruffed grouse; swans; ducks; geese; and cranes are found on Fort Greely. Waterfowl nest on Fort Greely pothole lakes and are absent from the area during winter. There are no accurate harvest or population data for these species.

3.9.2 Nongame Birds and Mammals

There is no complete mammal survey for Fort Greely. In 1979 a limited small mammal survey was done by a high school student (Summers, 1980). His literature review indicated 14 potential species, and he verified six of them.

There have been no general surveys for birds on Fort Greely. Some common nongame birds observed on the installation include the alder flycatcher, American kestrel, hawk owl, great-horned owl, yellow-rumped and orange-crowned warbler, common and hoary redpoll, dark-eyed junco, hairy woodpecker, red-tailed hawk, mew gull, gray jay, common raven, black-capped chickadee, American robin, varied thrush, hermit thrush, Swainson’s thrush, gray-cheeked thrush, Bohemian waxwing, snow bunting, and cliff swallow (Anonymous, 1979). In about 1983 a trumpeter swan survey found only eight of these birds on the installation. No subsequent surveys for swans have been conducted.

3.9.3 Fish

Species common in the Tanana River include year-round residents (reproduce there) such as burbot, sheefish, humpback whitefish, and suckers; overwintering migrant species (reproduce elsewhere) such as grayling, round whitefish, and northern pike; and migratory species such as salmon and Arctic lamprey. The Delta River is important to the fall chum salmon and is also home to coho salmon, although the latter are more common in the Clearwater River. Major streams on Fort Greely are generally silt laden and do not support fisheries. A few clear streams flowing into these larger streams provide summer habitat for grayling, but none is important for spawning (BLM and U.S. Army, 1994).

While some lakes and ponds on Fort Greely have naturally occurring populations of lake chub, northern pike, sculpin, and suckers, most are too shallow or oxygen deficient in the winter to support fish. About 500 anglers fish 15 lakes stocked by ADF&G with silver salmon, Arctic grayling, Arctic char, lake trout, and rainbow trout. Most of these lakes are readily accessible from the Richardson Highway. Koole Lake is west of the Delta River and is inaccessible by road (BLM and U.S. Army, 1994). A list of fish species recorded on Fort Greely is in INRMP Appendix 8-3.

3.9.4 Reptiles and Amphibians

Wood frogs (*Rana sylvatica*) are the only amphibians on Fort Greely. There are no reptiles.

3.9.5 Threatened or Endangered, and Species of Special Concern Animals

No federally-listed endangered animals are known to reside on Fort Greely. The endangered American peregrine falcon (*Falco pergrinus*) was delisted in 1999. Though not known to nest on Fort Greely, there have been falcon eyries along the Tanana River and Salcha River north of the installation. Peregrine falcons do not winter in Alaska.

The U.S. Forest Service lists the trumpeter swan (*Cygnus buccinator*) and American osprey *(Pandion haliaetus carolinensis*) as sensitive species. Trumpeter swans are known to nest on the West Training Area (CEMML, 1998).

Four passerines are listed as species of special concern by the state of Alaska have been confirmed on Army lands in interior Alaska. They are the olive-sided flycatcher (*Contopus borealis*), gray-cheeked thrush (*Catharus minimus*), Townsend's warbler (*Dendroica townsendii*), and blackpoll warbler *(Dendroica striata*) (CEMML, 1998).

3.10 Cultural Resources

In 1986 USARAK completed a Historic Preservation Plan for U.S. Army lands in Alaska, including Fort Greely (Bacon et al., 1986). This plan was never signed, but it contains most of what is known concerning cultural resources on Fort Greely. The remainder of this section, unless referenced otherwise, is condensed from that document.

There have been nine archeological investigations on Fort Greely. Six were small clearance surveys, which resulted in discovery of four sites. A 1963-64 survey of the Donnelly Dome area found 14 prehistoric sites (West, 1967). The Donnelly Ridge site is one of the most important in interior Alaska. In 1978 a reconnaissance-level survey was conducted in various areas of Fort Greely, resulting in the discovery of 62 sites (Holmes, 1979). In 1979 another survey located four sites (Bacon and Holmes, 1980). Sites are located in one of three physiographic settings: on a high point, on a bluff or terrace overlooking a major river or site drainage, or on a lake margin. However, there is an inherent bias in this conclusion since archeological investigations have emphasized these settings.

One site, Sullivan Roadhouse, is listed in the National Register. Three individual sites and the proposed Donnelly Ridge Archeological District (with 12 sites) are "Eligible". Twenty-nine sites are considered "Not Eligible" for the National Register. Another 39 sites lack adequate information for eligibility determination (BLM and U.S. Army, 1994).

Only a relatively small portion of Fort Greely has high sensitivity with regard to cultural resources, including portions of Big Delta Training Area, Black Rapids Training Site, and Gerstle River Training Site. These, plus the cantonment area, Idaho Range, Lampkin Range, Louisiana Range, Texas Range, and Jarvis West Training Area, are the highest priorities for survey. The rest of Fort Greely is low to moderate in sensitivity.

The Fort Greely area has probably supported human populations for 10,000-12,000 years. Interior Alaska contains the oldest verifiable prehistoric remains in the state, since the Interior was ice free during the Wisconsin glaciation. The oldest radiocarbon date on post is 8,555 ± 380 years. Some undated material resembles artifacts dating to 12,000 years ago.

The oldest datable material is affiliated with the Paleo-Arctic tradition, and the next major tradition, the Northern Archaic, is thought to have been developed in response to a warming climate when forests began to spread into the Interior.

Origins and development of the Athapaskan Indians are uncertain. The Athapaskan original homeland was the Tanana Valley. The Tanana Indians, a branch of the Northern Athapaskans, lived there, both historically and prehistorically. Local bands in the vicinity of Fort Greely included Salcha and Delta-Goodpaster. The Tanana was a highly mobile group at the time of European contact, moving to fish camps in summer and various hunting and trapping camps during other seasons. In the Fort Greely area, caribou was probably the main food supply.

The discovery of a prehistoric bison bone on Fort Greely is the most provocative faunal find. Bison became extinct during the last 2,000-3,000 years, due to severe winters and human predation. There is evidence that the Denali culture depended upon the bison, and this culture died out with the loss of the bison.

Indirect European contact began in the 1830s and 1840s, and direct trade began in the 1860s. During the 1860s, prospectors and explorers penetrated Tanana territory, and the discovery of gold in 1902 created the great influx of white settlers. Shortly thereafter, the traditional way of life of the Tananas was a thing of the past.

There are three historic sites and a historic trail on Fort Greely: Sullivan Roadhouse which is listed on the National Register; Gordon's Roadhouse, which is in ruins; Ptarmigan Creek Cabin, which is in a state of minor disrepair; and parts of the Washburn-Fairbanks winter sled trail, which was serviced by the two roadhouses. (Bacon et al., 1986; BLM and U.S. Army, 1994). In 1996 Sullivan Roadhouse was moved to Delta Junction.

Salcha Natives used the Delta River and Delta Creek for subsistence hunts in historic times. However, this generally ceased by the 1920s. By 1945 the natives had virtually abandoned Salcha, and in 1962 there were no native settlements in the Tanana Valley between Healy Lake and Nenana. Fort Greely has been little used by natives for subsistence for many years (BLM and U.S. Army, 1994).

4.0 ENVIRONMENTAL CONSEQUENCES

Neither the proposed action nor the partial implementation alternative would have significant negative environmental consequences compared to existing conditions. The other options alternative could have a wide range of environmental consequences, ranging from positive to very negative, on various components of the Fort Greely environment. The alternatives differ significantly in their ability to proactively manage natural resources, support the military mission, mitigate environmental damage due to the Army mission, and comply with environmental laws.

The INRMP provides a strategy and guidelines for managing natural resources, a course of action designed to significantly improve the management of Fort Greely's natural resources. The INRMP allows flexibility in management options as more information becomes available based on ongoing and planned studies.

This section provides a discussion of the environmental impacts of each alternative including the proposed action. This section is organized by alternative, with the impacts of each alternative discussed by the resources from Section 3.0.

4.1 Fully Implement INRMP Alternative

4.1.1 Geology and Soils

The proposed action includes an integrated program for planning land use, evaluating land use effects, and maintaining and repairing damaged lands. The Natural Resources Conservation Service is conducting a soil survey of Fort Greely that will be used to plan natural resources and military activities on the post. The ecological land classification system being implemented will identify priority areas of concern. The INRMP provides protection for areas classified as moist tundra and protection of permafrost.

The INRMP provides for repair of areas with damaged soil structure, particularly damage caused by the military mission. Brief periods of increased erosion would occur during maintenance and rehabilitation activities, but these would be more than compensated through increased environmental awareness while training, repair of significantly eroded sites, and including natural resources implications in military project planning. The proposed action offers the most effective protection and mitigation for damages incurred to soils by the Army mission.

4.1.2 Water Resources

The proposed action includes an integrated program for planning land use, protection of riparian areas, evaluation of land use effects, and management and repair of significantly eroding lands. The proposed action includes projects to site military missions and facilities on lands where negative impacts are minimized, enforce environmental restrictions (including those designed to protect water quality), protect watersheds and riparian areas, repair road drainages, minimize erosion, reduce pesticide use, use NEPA to review proposed actions for impacts on water quality, and increase awareness among troops as to the need to protect water quality. Brief periods of increased turbidity are possible during repair and construction activities, but these should be more than compensated for by increased environmental awareness while training, repair of significantly eroded sites, improvements to road drainage systems, and including natural resources implications in military project planning. The proposed action offers the most effective mitigation for damages incurred to surface waters due to the Army mission. Implementation of the proposed action would not affect groundwater.

Water quality, except as it directly relates to erosion, is not a natural resources program within the Army environmental program. Due to water quality laws, it is an environmental compliance program. However, the INRMP describes programs that impact surface water quality: erosion control, protection of wetland, reduced pesticide use, and awareness among troops regarding protection of water quality. Below discussions relate to these programs, not the water quality program as a whole.

4.1.3 Biological Resources

The proposed action would provide management of faunal and floral resources at Fort Greely on an integrated basis. The INRMP uses an ecosystem management strategy to achieve biological diversity conservation, in accordance with the Department of Defense Biodiversity Initiative (The Keystone Center, 1996).

The plan includes actions to manage natural ecosystems on Fort Greely, including inventory and monitoring flora and fauna to make management decisions, per the adaptive management process integral to ecosystem management. A geographic information system will be used to store, analyze, and portray data to facilitate the adaptive management process.

Programs which directly affect biological resources include the following:

- Protection of the Delta bison area, sandhill crane roosting area, Delta caribou calving and post-calving areas, and Dall sheep habitat
- Wildlife habitat manipulations, emphasizing moose, bison, and ruffed grouse habitat
- Wildlife population management, emphasizing fish and wildlife harvest management and fish stocking
- Monitoring ruffed grouse, bison, moose, caribou, Dall sheep, and other important game species
- Use of an ecological land classification system to prioritize management options
- Conducting a floristics inventory and wetlands delineation
- An integrated approach to pest management
- Minimizing damage to wildlife habitat by troops and other users
- Means to reduce nonpoint pollution of aquatic resources
- Wildfire management and the use of prescribed burning
- Repair of habitat damaged by troop training
- Managed furbearer harvest
- Research on ecosystem parameters to provide information upon which to base management decisions
- Enforcement of laws and regulations that protect biological resources
- A conservation education program to inform users of Fort Greely lands of the need to conserve biological resources
- Using the NEPA process to evaluate proposed projects for their effects on biological resources

This INRMP also provides a means to use biological resources for a wide variety of human uses, a major tenant of ecosystem management. These uses include military training and a variety of outdoor recre-

ational uses, including nature study and photography, hunting, fishing, trapping, skiing, recreational shooting, and others.

4.1.4 Cultural Resources

The proposed implementation of the INRMP would be beneficial to the identification and protection of historic resources. The INRMP does not emphasize cultural resources protection, but it contains provisions to locate historic sites if natural resources ground-disturbing projects are proposed for sites that are unsurveyed (Section 19-4 of the INRMP). The INRMP includes steps to protect cultural resources sites from damage during implementation of this plan. The NEPA process (INRMP Section 20-1) is used to ensure protection of cultural resources while implementing the INRMP.

4.2 Partial Implementation Alternative

4.2.1 Geology and Soils

The partial implementation alternative offers a less comprehensive program for the control and repair of negative soil impacts than the proposed action. Partial implementation of ITAM would reduce the planning capabilities of the program, so that the emphasis would be on repairing highly visible and disruptive damage rather than preventing or minimizing damage to soils. Consequently, negative soil impacts would be greater with partial implementation than under the proposed action.

4.2.2 Water Resources

Partial implementation, by definition, offers a less comprehensive program than the proposed action for the control and repair of damaged areas and road drainages, which contribute the most sedimentation. Partial implementation of ITAM would reduce the planning capabilities of the program, so that emphasis would be placed on repairing highly visible and disruptive damage rather than preventing or minimizing sedimentation from ongoing military activities. Consequently, sedimentation of surface waters would be greater than under the proposed action. Partial funding would not affect the reduction in pesticide use.

4.2.3 Biological Resources

The alternative action would be less effective than the proposed one since it would emphasize reaction to problems rather than a proactive approach to natural resources management. Partial implementation of the INRMP would emphasize responses to current needs to support the military mission as well as site-specific responses to environmental compliance. Surveys and monitoring of natural resources, as well as long-term programs, would be lower priority. A partial implementation approach would achieve compliance with laws, but it would not provide as many benefits to biological resources.

This alternative would help conserve biodiversity, but its overall effects on more sensitive plant and animal species would be significantly less than the proposed action. Conservation education and environmental awareness programs would be a low priority under a partial implementation action. Partial implementation would likely decrease habitat improvement programs for sharptail grouse, bison, and moose, which would impact upon the quality of recreation associated with these and other wildlife species. Partial implementation would decrease the effectiveness of the wildlife law enforcement program.

4.2.4 Cultural Resources

The partial implementation alternative would have no negative effects on cultural resources since USARAK would still have to comply with laws and policies requiring surveys prior to potential undertakings. It would probably somewhat enhance the effort to locate cultural sites, and such surveys would

probably eventually lead to protection of these sites. However, the amount of survey would be lessened as a result of fewer projects under this alternative action.

4.3 Other Management Options Alternative

4.3.1 Geology and Soils

The Army's ITAM program is the most advanced, intensive land management program in existence for preventing and mitigating damage to lands by military operations, so it is difficult to envision other options that would provide a more comprehensive package for the protection of soils on Fort Greely. The best means to obtain a greater rate of return from ITAM implementation would be more expenditure for ITAM, not a different soils protection/ rehabilitation program. However, the Army is already funding ITAM at USARAK installations at its highest level of four categories (almost $1 million specific to Fort Greely during 1997-2001), so additional funding for ITAM is not a viable option.

Almost any other option would likely provide less protection and mitigation of soil losses than the proposed action, since other programs are not specifically developed to deal with military-related activities impacts on soils. Other options could range from intensive traditional erosion control programs, which would provide relatively good soils protection, to virtually no erosion control or damage prevention, which would have negative effects on Fort Greely soils (and associated vegetation) over the next five years.

4.3.2 Water Resources

The Army's ITAM program is the most advanced, intensive land management program in existence for preventing and mitigating damage to lands by military operations. It is difficult to envision other options which would provide a more comprehensive package for the protection of surface water quality from sedimentation on Fort Greely. The ITAM Environmental Awareness component includes using education to minimize petroleum product spills while training on Fort Greely, which will help minimize pollution of surface and possibly groundwater.

The best means to obtain more water quality benefits would be more expenditures for ITAM, not a different erosion control program. However, the Army is already funding ITAM at Fort Greely at its highest level of four categories (almost $1 million specifically for Fort Greely during 1997-2001), so additional funding for ITAM is not a viable option.

Almost any other option would likely provide less protection of soils and mitigation of sedimentation than the proposed action, since other programs are not specifically developed to deal with military-related activities impacts on soils and watersheds. Other options could range from intensive traditional erosion control programs, which would provide relatively good sedimentation protection, to virtually no erosion control, which would have negative effects on Fort Greely wetlands and surface water quality in areas of heavy military use over the next five years.

4.3.3 Biological Resources

Management options selected within the INRMP are the result of decades of on-the-ground management of forests and biological resources on Fort Greely and other Army and Air Force installations in Alaska, as well as consultations with local and regional resources management professionals. The INRMP package represents the best opinions of USARAK natural resources personnel as well as those of cooperating partner agencies.

Therefore, the other options alternative, as a total package, would likely produce a lesser degree of ecosystem-wide benefits or be detrimental to some biological resources. Below are examples of other options and their likely effects:

- Natural succession could be allowed to proceed in areas where timber harvest, prescribed burning, or let-burn policies could be conducted. This, in turn, would decrease the value of Fort Greely for moose, bison, ruffed grouse, and other species that need earlier successional stages.
- Fort Greely could be managed for maximum security and minimum interference with the military mission. This would adversely affect outdoor recreation and cooperation with other agencies for natural resources studies.
- Fort Greely could be managed using more intensive fire suppression. This would alter basic ecosystem functionality, which has evolved over millennia.
- Fort Greely could be less intensively managed for its fisheries potentials, which would reduce recreational opportunities for anglers in the area.

The other options alternative would likely produce a less-balanced effect on biological resources than the proposed action. However, the degree of effect would be dependent upon objectives of natural resources management and the degree of implementation applied.

4.3.4 Cultural Resources

The other options alternative would have no negative effects on cultural resources because USARAK would still have to comply with laws and policies requiring surveys prior to potential undertakings. Many other options are potential undertakings and would require cultural resources surveys. If such sites were found, protection or mitigation alternatives would be implemented. The amount surveyed would be determined by the number of ground-disturbing projects proposed for sites that are unsurveyed.

4.4 No Action Alternative

The no action alternative would not implement an INRMP for Fort Greely. The Sikes Act (16 U.S.C. 670a *et seq*.), as amended, requires the Army implement an INRMP for Fort Greely. Implementation of the no action alternative will result in the Army's noncompliance with this federal law and, therefore, is not a viable alternative. As a result, the environmental impacts of the no action alternative will not be discussed.

5.0 LIST OF PREPARERS

The Environmental Assessment (EA) was prepared by Gene Stout and Associates, and the Center for Ecological Management of Military Lands. Data for the EA was obtained from the INRMP for Fort Greely, which includes a listing of the individuals who reviewed the INRMP (page iii) and those who contributed to its development (EA Section 6.0 Personas and Agencies Contacted).

6.0 PERSONS AND AGENCIES CONTACTED

The following persons were contacted during the preparation of the INRMP and/or during preparation of this Environmental Assessment.

Alaska Department of Fish and Game
Collins, Bill - Research Biologist
Dubois, Steve - Area Biologist
Parker, Fronty - Area Fisheries Biologist

Alaska Department of Natural Resources
Edgren, Al - Area Forester

Bureau of Land Management, U.S. Department of Interior
Bouts, Dick - District Co-Manager, Fairbanks
Burrows, Dan - Tanana Zone, Assistant Fire Management Officer, Alaska Fire Services
Cook, John P. - Archeologist, Fairbanks
Foreman, Gary - Realty Specialist
Gronquist, Ruth - Wildlife Biologist
Jandt, David - Fire Management Officer - Military, Alaska Fire Services
Mobraten, Dave - Realty Specialist
Theisen, Skip - Tanana Zone, Fuels Management Specialist, Alaska Fire Services

Forest Service, U.S. Department of Agriculture
Holsten, Edward H. - Entomologist, State and Private Forestry/Researcher, Pacific Northwest Experiment Station

Fort Greely (and other Alaska installations)
Breun, Jim - Range Manager, Directorate of Plans, Training, Security, and Mobilization, Fort Richardson
Bruce, Pam - Biological Technician, Natural Resources Branch, Fort Wainwright
Clark, Ellen – ITAM Coordinator, Natural Resources Branch, Fort Greely
Douglas, Linda - Public Affairs Officer, Fort Wainwright
Gossweiler, William - Chief, Natural Resources Branch, Fort Richardson
Griffin, Lee - Environmental Protection Specialist, Environmental and Natural Resources Division, Fort Wainwright
Hoke, Dennis - Fire Chief, USARAK, Fort Richardson
Larsen, Gary - ITAM Program Manager, Natural Resources Branch, Fort Richardson
Lassek, Thomas - Pest Management Coordinator, DPW, Fort Greely
Longnecker, Sheldon - Assistant Chief, Fire Department, Fort Greely
Ruerup, Charles - Chief, Environmental Division, Fort Wainwright
Sharp, Creig - Range Facility Manager, Fort Greely
Souhrada, Randy - Chief, Fire Department, Fort Greely
Spiers, Ken - Chief, Natural Resources Branch, Fort Wainwright
Van Den Heuvel, Walt - Forest Technician, Natural Resources Branch, Fort Wainwright
Wilkerson, Derrick - Environmental Specialist, DPW, Fort Greely

Natural Resources Conservation Service, U.S. Department of Agriculture
Kuykendall, Joanne - District Conservationist

U.S. Fish and Wildlife Service
MacIntosh, Erv - Biologist, Ecological Services, Fairbanks
Sousa, Pat - Field Supervisor, Ecological Services, Fairbanks

7.0 REFERENCES

Anonymous. 1979. *Draft Environmental Impact Statement Concerning Installation Utilization for 172nd Infantry Brigade Alaska, at Fort Greely*. 137 pp + appendices.

_____. 1995a. *The Army in Alaska*. A U.S. Army-authorized publication by Blake Publishing of Alaska, Inc. 88 pp.

Bacon, G. and C.E. Holmes. 1980. *Archeological Survey and Inventory of Cultural Resources at Fort Greely, Alaska*. Final report submitted by Alaskarctic to the U.S. Army Corps of Engineers, Alaska District DACA85-78-C-0045.

Bacon, G.H., J.A. Ketz, and C.M. Mobley. 1986. *Historic Preservation Plan for U.S. Army Lands in Alaska*. Produced by the Alaska Heritage Research Group, Inc. under contract DACA85-84C-0040 for the U.S. Army Corps of Engineers, Alaska District.

Bonito, L.J. 1980. *Final Environmental Impact Statement - Land Withdrawal, 172nd Infantry Brigade (Alaska) at Fort Greely, Alaska*. 172nd Infantry Brigade (Alaska), Fort Richardson.

Bureau of Land Management and U.S. Army. 1994. *Fort Greely: Resource Management Plan, Final Environmental Impact Statement*. Bureau of Land Management, Steese/White Mountains District and U.S. Army, 6th Infantry Division (Light). Anchorage, Alaska. 132 pp.

DuBois, S. 1992. *History and Current Status of the Delta Bison Herd*. Unpublished draft report by Alaska Department of Fish and Game, Delta Junction. 20 pp.

Headquarters, U.S. Army, Pacific. 1996. *Implementation Plan for Realignment of Fort Greely*. 6 pp + appendices.

Higginbotham / Briggs & Associates. 1991. *Installation Design Guide*. Prepared for Fort Richardson under direction of Alaska District, U.S. Army Corps of Engineers, Anchorage, AK.

Holmes, C.E. 1979. *Report of Archeological Reconnaissance: Withdrawal Areas, Fort Greely, Alaska*. Final report submitted to the U.S. Army Corps of Engineers, Alaska District (DACA85-79-001).

Kiker, E.B. and P.C. Fielder. 1980. *A Bison Management Plan for Fort Greely, Alaska*. Fort Greely and Fort Richardson, AK. 7 pp.

Nakata Planning Group. 1987. *Master Plan Report*. Prepared for U.S. Army Corps of Engineers, Alaska District. Anchorage, AK.

Racine, Charles H. and James C. Walters. 1991. *Groundwater-Discharge Wetlands in the Tanana Flats, Interior Alaska.* CRREL Report 91-14. U.S. Army Corps of Engineers, Cold Regions Research and Engineering Laboratory, Hanover, New Hampshire. 10 pp.

Spiers, J.K. 1982. *Fish and Wildlife Management Plan*. Fort Greely, AK.

Spiers, J.K. and W.E. Heimer. 1990. *Dall Sheep Movements Near Fort Greely Alaska: Preliminary*

Findings. Proceedings of the Seventh Biennial Symposium of the Northern Wild Sheep and Goat Council 7:31-37.

Summers, H. 1980. *Small Mammals Survey on Fort Greely, Alaska*. Fort Greely files. 3 pp + appendices.

Tanana Chiefs Conference, Inc. 1993. *Forest Resources of Bureau of Land Management and Military Lands Within a 100 Mile Radius of Fairbanks, Alaska*. Fairbanks, Alaska. 137 pp.

The Keystone Center. 1996. *A Department of Defense (DoD) Biodiversity Management Strategy*. Keystone Center Policy Dialogue on Department of Defense (DoD) Biodiversity, Final Report. Keystone, CO. 38 p.

U.S. Army. undated. *Alaska Ranges and Training Areas, The Vision of the North*. An Overview of Alaska Ranges and Training Areas.

Viereck, L.A. and E.L. Little, Jr. 1972. *Alaska Trees and Shrubs*. Agricultural Handbook 410. U.S. Forest Service, Washington, D.C. 265 pp.

West, F.H. 1967. *The Donnelly Ridge Site and the Definition of an Early Core and Blade Complex in Central Alaska*. American Antiquity 32(3): 360-382.

FINDING OF NO SIGNIFICANT IMPACT

ENVIRONMENTAL ASSESSMENT

FOR IMPLEMENTATION OF AN

INTEGRATED NATURAL RESOURCES MANAGEMENT PLAN
FORT GREELY, ALASKA

NOVEMBER 1999

DESCRIPTION OF ACTION: United States Army Alaska (USARAK) proposes to fully implement an Integrated Natural Resource Management Plan at Fort Greely during 1998-2002 to manage natural resources, support the military mission, provide outdoor recreation opportunities and comply with various environmental laws. Implementation will include ongoing operations over the five-year period using both in-house and external personnel. The primary thrust of the program will be to survey natural resources and implement programs to conserve and manage them in a proactive manner in compliance with environmental laws and regulations.

ANTICIPATED ENVIRONMENTAL EFFECTS: The only adverse impacts identified were temporary increases in soil erosion and resulting sedimentation of surface waters during land rehabilitation actions. Potential negative impacts would be more than offset by positive impacts of implementing this Integrated Natural Resources Management Plan. No adverse impact is expected to occur to any federally-listed threatened or endangered plant or animal species. No significant adverse environmental impacts are anticipated for geology, soils, water quality, biological resources, or cultural resources. This proposed action would positively impact most of these resources.

CONCLUSIONS: Based on a review of the information contained in this Environmental Assessment, it is concluded that the implementation of the Fort Greely Integrated Natural Resources Management Plan is not a major federal action which would significantly affect the quality of the environment within the meaning of Section 102(2)(c) of the National Environmental Policy Act of 1969, as amended. Accordingly, the preparation of an Environmental Impact Statement for this proposed action is not required.

DEADLINE FOR COMMENTS AND POINTS OF CONTACT FOR INFORMATION: Interested parties are invited to submit, in writing, any comments or objections they may have concerning the proposed action. Comments received will be reviewed and relevant issues will be addressed and incorporated into a revised EA. If no comments are received during the public comment period, the original EA will become the final EA document. For further information, please contact **Chuck Canterbury, Media Relations Officer, United States Army, Alaska (USARAK), Alaska Public Affairs Office, Fort Richardson, Alaska 99505-5900, telephone (907) 384-2113.**

NOTICE OF AVAILABILITY AND PUBLIC COMMENT PERIOD

The National Environmental Policy Act (NEPA) of 1969 is implemented by Army Regulation (AR) 200-2 (Environmental Effects of Army Actions), December 1988. Chapter 5 of AR 200-2 authorizes the preparation of a Finding of No Significant Impact (FONSI) after an Environmental Assessment (EA) review indicates that an Environmental Impact Statement (EIS) is not required.

ACTION: United States Army Alaska (USARAK) proposes to implement an Integrated Natural Resource Management Plan (INRMP) at Fort Greely during 1998-2002 to manage natural resources, support the military mission, provide outdoor recreation opportunities, and comply with various environmental laws.

ENVIRONMENTAL DOCUMENTS: An EA and FONSI have been prepared for the implementation of the INRMP at Fort Greely. Copies of these documents are available upon request. Interested parties are invited to submit, in writing, any comments or objections they may have concerning the proposed action. Comments received will be reviewed and relevant issues will be addressed and incorporated into a revised EA. If no comments are received during the Public Comment Period, the original EA will become the final EA document. **For further information, please contact Chuck Canterbury, Media Relations Officer, United States Army Alaska (USARAK), Public Affairs Office, Fort Richardson, Alaska 99505-5900, telephone: (907) 384-2113.**

SUPPLEMENTAL INFORMATION: An EA is prepared to determine the extent of environmental impacts of a proposed action and decides whether or not these impacts are significant. If the proposed action may or will result in significant impacts, an EIS is prepared to provide additional information on the context, duration, and intensity of the impacts. If an EA shows that the proposed action will not result in significant impacts, a FONSI is prepared and NEPA compliance is satisfied. A FONSI is a document that briefly presents the reasons why a proposed action will not have a significant effect on the quality of the human environment.

The FONSI documents the decision that an EIS is not required for NEPA compliance. A FONSI is completed when no comment period is necessary; a comment period was held but evidenced no significant public concern; or public concern resulted in reconsideration of the FONSI, which was still appropriate upon re-examination.

APPENDIX 2-4

MEMORANDUM of UNDERSTANDING
CONCERNING THE
MANAGEMENT OF CERTAIN PUBLIC LANDS
WITHDRAWN FOR MILITARY USE

Fort Greely and Fort Wainwright (AMA) MOU

III. AUTHORITY

A. Military Lands Withdrawal Act of 1986 (P.L. 99-606)

B. Federal Land Policy and Management Act of 1976 (P.L. 94-579), as amended

C. National Environmental Policy Act of 1969 (P.L. 91-190), as amended (NEPA)

D. Sikes Act (P.L. 86-797), as amended

IV. DEFINITION

Nonmilitary use: All human use of the land or natural resources of these withdrawn lands that is not connected in any way to the military mission.

Military use: Any use of the land or natural resources connected in some way to the present or future military mission.

V. RESPONSIBILITIES AND PROCEDURES

A. Implementation of the Fort Greely Resource Management Plan and the Fort Wainwright Yukon Maneuver Area Resource Management Plan

USARAK and BLM agree to implement both RMPs. In furtherance of these plans, USARAK and BLM will, at a minimum, jointly develop and maintain the following activity plans as personnel and budgetary allocations permit. The activity plans will describe in greater detail than the RMPs the management steps to be undertaken to fulfill the decisions of the RMPs. All plans will be designed to meet applicable BLM and Army regulations and directives.

1. Habitat Management Plans (both forts)
2. Cultural Resources Management Plans (both forts)
3. Forest Management Plans (both forts)
4. Recreation Activity Management Plan (Fort Greely only)
5. Fire Management Plans (both forts)

B. Nonmilitary Activities

1. All nonmilitary use of these withdrawn lands shall be subject to such conditions and restrictions as may be necessary to permit the continued and future military use of such lands. Any use authorized by BLM will have USARAK concurrence so that military use of the land is not hindered.

2. BLM or the proponent shall prepare environmental documentation for nonmilitary activities on these withdrawn lands following a preliminary consultation with USARAK. BLM shall coordinate all NEPA documents, formal consultations,

and permits with USARAK, providing opportunity to comment, during each stage of the authorization process. USARAK shall comment in writing. BLM will provide USARAK copies of all final NEPA and authorization documents.

3. BLM may issue use authorizations or resource sales only with the concurrence of USARAK. USARAK will grant or deny concurrence in writing. USARAK will respond to a request for project review and concurrence within 30 calendar days, except that extensions of time may be requested for cause. Generally, actions which can be approved locally will be returned within the allotted time; however, for any actions which require approval at higher headquarters (outside Alaska), an additional 30-60 days will be required. USARAK may attach stipulations designed to protect military present and future use of the land to any concurrence for nonmilitary use. Such stipulations, however, shall not be used as a de facto means of denying nonmilitary use. USARAK's concurrence may be withdrawn for cause.

C. Military Activities

1. USARAK or the proponent of military activities shall prepare environmental documentation for military activities on these withdrawn lands in accordance with 32 CFR 651. This environmental documentation should address impacts of the proposed military activities on the decisions and resources addressed in the RMP and the associated activity plans. USARAK shall coordinate all NEPA documents, formal consultations, and permits with BLM, providing opportunity to comment, as appropriate. BLM shall comment in writing. USARAK will provide BLM copies of all final NEPA and authorization documents.

2. USARAK shall promptly notify BLM in the event that these withdrawn lands will be used for defense-related purposes other than those specified in Section 1 of the Military Lands Withdrawal Act of 1986 (Sec. 3(f)). Such notification must indicate the additional uses involved, the proposed duration of such uses and any proposed restrictions to be imposed on otherwise permitted non-military uses of the withdrawn lands.

D. Access

1. The military's need for secure and safe training areas dictates that USARAK has responsibility for controlling access to these withdrawn land. In the exercise of these responsibilities and in conformance with decisions reached in the resource management plans, USARAK:

   a. will maintain signs at all major road and trail entrances to the withdrawn lands identifying the property and the requirements for entering,
   b. will maintain signs warning the public and prevent access into impact areas and other restricted areas,
   c. may allow specific nonmilitary uses and users into closed areas as appropriate,

Fort Greely and Fort Wainwright (FNLA) MOU

d. will close potentially dangerous lands in addition to those described in the BMPs, if any are created or discovered;
e. may close a buffer zone around impact areas during times of use,
f. may close any area of the withdrawals in accordance with Sec. 3(b), PL 99-606;
g. may restrict vehicle use more than described in the resource management plans, if required to preclude conflicts with the military's mission; and
h. will remediate the two Nike battery sites in the Yukon Maneuver Area as funding is made available to eliminate potential human health risks.

2. BLM, in coordination with USARAK, may impose greater restrictions on nonmilitary vehicle use than described in the BMPs as necessary to protect the environment.

3. BLM and USARAK, through mutual consent, may lift restrictions on vehicle use described in the BMPs.

4. All trespass constitutes an infringement upon the military mission and is subject to BLM and USARAK law enforcement activities. In cases in which the action of the trespasser, if otherwise undertaken pursuant to valid permit or other authorization, would require the payment of rentals, fees, or appraised value, USARAK will coordinate law enforcement activities with BLM. Recovery of damages or lost revenue shall be carried out by BLM, but shall in no way inhibit or delay USARAK's abatement activity.

E. Sharing Inventory, Monitoring, and Other Studies

USARAK and BLM will coordinate with each other prior to initiating inventory, monitoring, or similar studies of natural resources related to these withdrawn lands. These agencies will share data and reports resulting from such studies. Studies or projects initiated by agencies other than USARAK shall be approved by USARAK and BLM prior to conduct.

F. Fire Management

Fire management will be conducted in accordance with the BMPs and the Interagency Fire Management Plan.

G. Coordination

BLM and USARAK will meet at the staff level as needed regarding management of these lands and the terms of this MOU.

Fort Greely and Fort Wainwright (YMA) MOU

H. Cost Reimbursement

Cost reimbursement can only be initiated after all requirements are coordinated and documented with installation- or action-specific agreements. This MOU does not modify or supersede any existing agreements.

VI. ADMINISTRATION

A. Nothing in this MOU shall be construed as obligating USARAK or BLM to expend funds in excess of appropriations authorized by law.

B. USARAK and BLM agree to the following measures to coordinate implementation and resolve disputes regarding this MOU and the BMPs:

1. The primary USARAK point of contact will be the local Natural Resources Manager (currently located within the Directorate of Public Works, Environmental Resources Department). The Natural Resources Manager will coordinate actions through the appropriate military chain of command for approval or concurrence.
2. The primary BLM point of contact will be the Steese/White Mountains District Resource Division Supervisor. The Resource Division Supervisor will coordinate actions through the appropriate BLM chain of command for approval or concurrence.
3. The second level for project coordination and dispute resolution shall be:
   a. USARAK--Director of Public Works, Fort Richardson, Alaska.
   b. BLM--District Manager, Steese/White Mountains District.
4. The above named points of contact may be changed by giving written notification.
5. The third level of project coordination and dispute resolution shall be:
   a. USARAK--USARAK Commander
   b. BLM--Alaska State Director
6. USARAK and BLM may enter into supplemental agreements where necessary to specify interrelationships in detail or for specific projects or activities. Any supplemental agreement will be in accordance with this MOU and the Military Lands Withdrawal Act of 1986.

C. USARAK and BLM will review this MOU at least every 3 years to determine its adequacy, effectiveness, and need for updating.

D. The terms of this MOU may be renegotiated at any time at the request of either signatory, following 30 days notice to the other party.

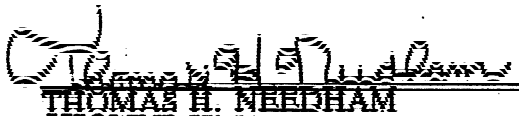
E. Either party may propose changes to this MOU during its term. Such changes will be in the form of an amendment and will become effective upon signature by

both parties. Such amendments may be signed by the signatory or that person's successor or designee.

F. This MOU will expire November 6, 2001, unless cancelled, extended, or renewed.

G. This MOU will become effective upon signature by the BLM and USARAK.

APPROVED:



THOMAS H. NEEDHAM
Major General, U.S. Army
Commanding

26 MAY 94
Date

TOM ALLEN
State Director, Alaska State Office
Bureau of Land Management

5/26/94
Date

APPENDIX 5-3a: Specific Items of Cooperation Between the Bureau of Land Management, U.S. Fish and Wildlife Service, Alaska Department of Fish and Game, and U.S. Army Alaska

PURPOSE: This document lists items to be provided by the Alaska Department of Fish and Game (ADFG), U.S. Fish and Wildlife Service (USFWS), Bureau of Land Management (BLM), and U.S. Army Alaska (USARAK) for cooperative implementation of the Fort Greely Integrated Natural Resources Management Plan. Items not listed will generally be the responsibility of USARAK unless responsibility is specifically designated by law to another agency, or the other agencies agree to assist with their implementation.

AUTHORITY: In accordance with the authority in Title 10, U.S. Code, Section 2671, and Title 16, U.S. Code, Section 670, the Department of Defense, the Department of Interior, and the State of Alaska, through their duly designated representatives whose signatures appear on the Fort Greely Integrated Natural Resources Management Plan, approve the Integrated Natural Resources Management Plan and the following items of cooperation between the three agencies.

MUTUAL AGREEMENT:

- Persons hunting, trapping, or fishing the lands or waters of Fort Greely shall be required to obtain special Fort Greely hunting or fishing licenses unless exempt by USARAK regulations. At present, there is no cost for these licenses, but USARAK reserves the right to charge for these licenses in the future. Any funds derived from the sale of these licenses would be used exclusively for implementation of the Fort Greely Integrated Natural Resources Plan in accordance with Army regulations and the Sikes Act. Fees charged would be established by the installation in accordance with Army regulations.
- Persons hunting, trapping, or fishing the lands of Fort Greely must purchase state licenses, tags, and stamps as required by the ADFG, unless exempt by ADFG regulations. The ADFG agrees that military personnel on active duty and permanently stationed in Alaska may purchase special fishing and small game licenses at resident prices. The ADFG also agrees that active duty military personnel, not including dependents, may hunt big game without licenses or tags on military lands open to hunting providing they follow ADFG hunting regulations. Nonresident military hunters (lived in Alaska less than 12 months) stationed in Alaska must purchase nonresident hunting licenses and appropriate big game tags to hunt big game, but the tags will cost one-half the normal nonresident price.
- A federal waterfowl stamp is required for hunting waterfowl as prescribed by federal laws.
- All hunting, fishing, and trapping on Fort Greely will be in accordance with federal and state fish and game laws.
- Representatives of ADFG, BLM, and USFWS will be admitted to the installation at reasonable times, subject to requirements of military necessity and security. Such personnel may use U.S. Army transportation on a nonreimbursable basis, to include aircraft, for wildlife related functions on Fort Greely provided such transportation is available without detriment to the military mission.
- USARAK shall furnish assistance and facilities to ADFG, BLM, and/or USFWS for mutually agreed upon natural resources research projects.
- No exotic species of fish or wildlife will be introduced on Fort Greely lands without prior written approval of the Army, ADFG, BLM and USFWS.

- The state of Alaska shall establish season and bag limits for harvest of game species on Fort Greely. The USARAK may make special requests for such regulations according to procedures established by the ADFG.
- Hunting, trapping, and fishing on Fort Greely will be authorized and controlled by the installation commander in accordance with locally published installation regulations promulgated in compliance with applicable federal and state laws, Army regulations, military requirements, and the Integrated Natural Resources Management Plan.
- Public access for hunting, trapping, and fishing is approved under a system of controls established by USARAK in cooperation with ADFG. Civilians will be considered on an equal basis with military and Army civilian employees for permits and access to hunting and fishing areas. Should there be a need for quotas on the number of hunters permitted on a daily or seasonal basis for reasons of safety, such quotas will not be instituted prior to consultation with ADFG. Hunting, trapping, and fishing will be allowed only on those areas where there is no conflict with military training activities and no unreasonable safety hazard to participants, military personnel and dependents, or Army civilian employees. Certain areas will be closed to hunting and fishing, including, but not limited to, impact areas containing unexploded ordnance and training areas with sensitive electronic equipment. Such areas will be marked as closed on installation hunting maps. Training areas will be open daily when not scheduled for military training activities. Installation maps indicating open and closed areas will be posted and updated daily, or as required, by USARAK.
- Fort Greely has concurrent jurisdiction with regard to law enforcement. In areas of concurrent jurisdiction, Alaska laws may be enforced by either federal or state commissioned enforcement personnel. Enforcement will be a joint responsibility of USARAK, Alaska State Troopers, and the USFWS.
- USARAK agrees to cooperate with the USFWS and ADFG for management of any threatened or endangered species residing on the installation. Such efforts will be in compliance with federal and state laws and applicable Army regulations.
- USARAK agrees that persons using withdrawn lands for commercial purposes must have BLM permits in addition to Army approval.
- ADFG agrees to continue to stock Fort Greely lakes. ADFG will determine the number and species of fish to be stocked based on angler use trends and fish availability.
- USARAK has the option to directly transfer funds to the ADFG, USFWS, or BLM for implementation of this Integrated Natural Resources Management Plan.
- It is understood that implementation of this INRMP requires certain latitude in professional decisions. However, USARAK agrees that any land use change that significantly impacts natural resources must include modification of this INRMP in addition to any other environmental compliance requirements.
- ADFG, BLM, and USFWS shall furnish technical assistance for development and implementation of professionally sound natural resources programs on Fort Greely, provided funding for such support is available.

When USARAK chooses the option to directly transfer funds to ADF&G, USFWS, or BLM, USARAK agrees:

(1) To develop a scope of work for each project to be accomplished under this agreement.

(2) To issue a delivery order or MIPR, executed by a USARAK contracting officer or budget officer, obligating funds to accomplish the agreed-upon scope of work at an agreed-upon price.

(3) To reimburse ADF&G, USFWS or BLM for any supplies, equipment, travel and personnel services (including salary, benefits, sick and annual leave accrual); direct administrative cost for project procurement; logistical arrangements (travel, housing, utilities, vehicles, conferences, workshops and project reviews); human resources (job searches, processing of employment forms, project-specific personnel issues, time sheets, hourly employees and leave reports); project reports (editing, graphics, publication); program management; and overhead cost not to exceed 10%, consistent with OMB Circular A-21.

ADF&G, USFWS and BLM agree:

(1) To provide technical assistance through employees or qualified agents who have the expertise necessary to carry out the purpose of this agreement.

(2) To enter into consulting agreements or subcontracts with other qualified agents who have

expertise to assist in the execution of this agreement.

(3) To purchase equipment, software, and materials and provide maintenance and repair of equipment that is required to carry out the purpose of this agreement. The equipment purchased under this agreement will be used to satisfy the objectives of this agreement. USARAK will reimburse ADF&G, USFWS or BLM for the purchase price of required equipment and materials and the cost of maintenance and repair of said equipment necessary for project completion. Equipment and material over $1000.00 purchased under this agreement shall become property of USARAK at the completion of work undertaken pursuant to this agreement.

(4) To bill USARAK quarterly on a reimbursable basis for costs as provided under the terms of this agreement and individual delivery order or MIPR. Billing statements should be addressed to:

Directorate of Public Works
730 Quartermaster Road
ATTN: APVR-RPW-EV (Johnson)
Fort Richardson, Alaska 99505-6500

LIMITATIONS:

The military mission of Fort Greely supersedes natural resources management and associated recreational activities and such activities must in all instances be compatible with the military mission. However, where there is conflict between the military mission and provisions of the Endangered Species Act, the Sikes Act, or any other law associated with natural resources conservation, such conflicts will be resolved according to statutory requirements.

REQUIRED AGREEMENTS:

- Nothing contained in this agreement shall modify any rights granted by treaty to any Native Alaskans or Indian tribe or to members thereof.
- The possession of a special permit for hunting migratory game birds will not relieve the permittees of the requirements of the Migratory Bird Stamp Act, as amended.
- This INRMP is a Federal Facilities Compliance Agreement.
- As required by the Sikes Act, the following agreements are made:

  (1) This Fort Greely Integrated Natural Resources Management Plan is the planning document required by the Sikes Act, as amended. This plan contains items required by law. In the event the

Sikes Act is amended after this INRMP is signed, this plan will be amended to conform with the new requirements within the Sikes Act if needed.

(2) This Plan will be reviewed by the ADFG, BLM, USFWS, and USARAK regularly, but not less often than every five years.

(3) No land or forest products from land on Fort Greely will be sold under Section 2665 (a) or (b), Title 10 USC, and no land will be leased on Fort Greely under Section 2667 of Title 10 unless the effects of such sales or leases are compatible with the purposes of the Integrated Natural Resources Management Plan.

(4) With regard to the implementation and enforcement of the Fort Greely Integrated Natural Resources Management Plan, neither Office of Management and Budget Circular A-76 nor any successor circular thereto applies to the procurement of services that are necessary for that implementation and enforcement, and priority shall be given to the entering into of contracts for the procurement of such implementation and enforcement services with federal and state agencies having responsibility for the conservation or management of fish or wildlife.

(5) The Fort Greely Integrated Natural Resources Management Plan is not, nor will be treated as, a cooperative agreement to which the Federal Grant and Cooperative Agreement Act of 1977 applies.

(6) This Integrated Natural Resources Management Plan will become effective upon the date subscribed by the last signature and shall continue in full force for a period of five years or until terminated by written notice to the other parties by any of the parties signing this agreement. This agreement may be amended or revised by agreement between the parties hereto. Action to amend or revise may originate with any of the other participating agencies.

(7) The USARAK, ADFG, and the USFWS enter into this agreement based on the requirements and opportunities in the Sikes Act, as amended. The three parties are aware that the BLM is also a signatory partner to this Integrated Natural Resources Management Plan.

APPENDIX 8-3: Fauna of Fort Greely

Mammals. This list includes confirmed species on Fort Greely.

Scientific Name	Common Name	Habitat
Microtus miurus	Alaska/singing vole	slopes
Microtus pennsylvanicus	meadow vole	meadow
Microtus oeconomus	tundra vole	alpine
Microtus xanthognathus	yellow-cheeked vole	spruce forests
Microtus longicaudus	longtail vole	
Clethrionomys rutilus	redback tundra vole	alpine, forest
Lemmus trimucronatus	brown lemming	alpine
Synaptomys borealis	northern bog lemming	wet alpine tundra, muskeg
Peromyscus maniculatus	deer mouse	dry forest, grassland
Zapus hudsonius	meadow jumping mouse	
Sorex hoyi	pygmy shrew	forest, grassland
Sorex monticulus	dusky shrew	muskeg, forest
Sorex cinereus	masked shrew	subalpine
Sorex tundrensis	tundra shrew	tamarack and spruce swamps
Myotis lucifugus	little brown bat	wooded areas, abandoned bldgs
Mustela erminea	shorttail weasel (ermine)	forest, brush
Mustela nivalis	least weasel	brush
Mustela vison	mink	near water
Marmota caligata	hoary marmot	alpine
Marmota monax	woodchuck	open grassland
Lontra canadensis	river otter	near water
Lepus americanus	snowshoe hare	forest, brush
Ondatra zibethicus	muskrat	near water, marsh
Spermophilus parryii	Arctic ground squirrel	alpine
Erethizon dorsatum	porcupine	coniferous forest
Ochotona collaris	collared pika	Donnelly Dome
Tamiasciurus hudsonicus	red squirrel	spruce forest
Glaucomys sabrinus	northern flying squirrel	some in nest boxes
Castor canadensis	beaver	streams
Martes americana	marten	spruce forest
Gulo luscus	wolverine	subalpine, forest
Ursus arctos	brown (grizzly) bear	alpine, subalpine
Ursus americanus	black bear	forests
Canis latrans	coyote	ubiquitous
Canis lupus	gray wolf	alpine, forest, muskeg
Vulpes vulpes	red fox	ubiquitous
Lynx canadensis	lynx	forest, muskeg
Ovis dalli	Dall sheep	alpine
Bison bison	bison	grassland, along river bars, agricultural areas
Rangifer tarandus	caribou	tundra, open forest
Alces alces	moose	brush, forest

Sources: Anonymous. 1979. *Draft Environmental Impact Statement Concerning Installation Utilization for 172nd Infantry Brigade Alaska, at Fort Greely*. Appendix E.
Summers. 1980. *Small Mammals Survey on Fort Greely, Alaska*.

Unpublished Fort Greely data.

Fish:

Scientific Name	Common Name
Lampetra japonica	Arctic lamprey
Stenodus leucichthys nelma	sheefish
Coregonus pidschian	humpback whitefish
Prosopium cylindraceum	round whitefish
Oncorhynchus keta	chum salmon
Oncorhynchus kisutch	coho salmon
Oncorhynchus tshawytscha	chinook salmon (stocked)
Oncorhynchus mykiss	rainbow trout (stocked)
Salvelinus namaycush	lake trout (stocked)
Esox lucius	northern pike
Couesius plumbeus	lake chub
Catostomus catostomus	longnose sucker
Lota lota	burbot
Cottus cognatus	slimy sculpin
Thymallus arcticus	Arctic grayling
Salvelinus alpinus	Arctic char (stocked)

Sources: Anonymous, 1979. *Draft Environmental Impact Statement Concerning Installation Utilization for 172nd Infantry Brigade Alaska, at Fort Greely*. Appendix E.

Unpublished Fort Greely data.

Amphibians and Reptiles:

Scientific Name	Common Name	Habitat
Rana sylvestris	wood frog	bogs, lakes, marshes

Birds:

Scientific Name	Common Name
LOONS, GREBES, PELICANS	
Gavia immer	common loon
Gavia arctica	Arctic loon
Gavia stellata	red-throated loon
Podiceps grisegena	red-necked grebe
Podiceps auritus	horned grebe
WATERFOWL	
Cygnus columbianus	tundra swan
Cygnus buccinator	trumpeter swan
Anser albifrons	greater white-fronted goose
Chen caerulescens	snow/blue goose
Branta canadensis	Canada goose
Branta nigricans	black brant
Anas platyrhynchos	mallard
Anas strepera	gadwall

Anas crecca	green-winged teal
Anas americana	American widgeon
Anas acuta	northern pintail
Anas clypeata	northern shoveler
Anas discors	blue-winged teal
Aythya americana	redhead
Aythya valisineria	canvasback
Aythya collaris	ring-necked duck
Aythya marila	greater scaup
Aythya affinis	lesser scaup
Bucephala islandica	Barrows goldeneye
Bucephala clangula	common goldeneye
Bucephala albeola	bufflehead
Mergus merganser	common merganser
Mergus serrator	red-breasted merganser
Clangula hyemalis	oldsquaw
Histrionicus histrionicus	Harlequin duck
Melanitta fusca	white-winged scoter
Melanitta deglandi	common scoter
Melanitta perspicillata	surf scoter

VULTURES, HAWKS & FALCONS

Haliaeetus leucocephalus	bald eagle
Aquila chrysaetos	golden eagle
Circus cyaneus	northern harrier
Falco rusticolus	gyrfalcon
Falco peregrinus	peregrine falcon
Falco columbarius	merlin
Falco sparverius	American kestrel
Buteo jamaicensis	red-tailed hawk
Buteo lagopus	rough-legged hawk
Buteo swainsoni	Swainson's hawk
Buteo jamalcensis harlani	Harlan's hawk
Accipter striatus	sharp-shinned hawk
Accipter gentilis	northern goshawk
Pandion haliaetus	osprey

OWLS

Asio flammeus	short-eared owl
Bubo virginianus	great horned owl
Strix nebulosa	great gray owl
Surnia ulula	northern hawk owl
Nyctea scandiaca	snowy owl
Aegolius funereus	boreal owl

GALLINACEOUS BIRDS

Lagopus lagopus	willow ptarmigan
Lagopus mutus	rock ptarmigan
Lagopus leucurus	white-tailed ptarmigan
Falcipennis canadensis	spruce grouse

Bonasa umbellus	ruffed grouse
Tympanuchus phasianellus	sharp-tailed grouse

SHOREBIRDS

Grus canadensis	sandhill crane
Fulica americana	American coot
Charadrius semipalmatus	semipalmated plover
Charadrius vociferus	killdeer
Pluvialis squatarola	black-bellied plover
Pluvialis dominica	American golden plover
Numenius phaeopus	whimbrel
Bartramia longicauda	upland sandpiper
Tringa flavipes	lesser yellowlegs
Tringa solitaria	solitary sandpiper
Heteroscelus incanus	wandering tattler
Actitis macularia	spotted sandpiper
Phalaropus lobatus	red-necked phalarope
Stercorarius longicaudus	long-tailed jaeger
Limnodromus scolopaceus	long-billed dowitcher
Gallinago gallinago	common snipe
Aphriza virgata	surfbird
Calidris pusilla	semipalmated sandpiper
Calidris mauri	western sandpiper
Calidris melanotos	pectoral sandpiper
Calidris bairdii	Baird's sandpiper
Calidris minutilla	least sandpiper
Calidris alpina	dunlin
Calidris alba	sanderling

GULLS & TERNS

Larus argentatus	herring gull
Larus canus	mew gull
Sterna paradisaea	Arctic tern

DOVES

Columba livia	rock dove

HUMMINGBIRDS

Selasphorus rufus	rufous hummingbird

KINGFISHER

Ceryle alcyon	belted kingfisher

WOODPECKERS

Picoides villosus	hairy woodpecker
Picoides tridactylus	three-toed woodpecker
Colaptes auratus	northern flicker
Picoides arcticus	black-backed woodpecker
Picoides pubescens	downy woodpecker

PERCHING BIRDS

Sayornis saya	Say's phoebe
Empidonax traillii	Traill's/willow flycatcher
Contopus cooperi	olive-sided flycatcher
Contopus sordidulus	western wood-pewee
Eremophila alpestris	horned lark
Tachycineta bicolor	tree swallow
Tachycineta thalassina	violet-green swallow
Riparia riparia	bank swallow
Petrochelidon pyrrhonota	cliff swallow
Corvus corax	common raven
Perisoreus canadensis	gray jay
Pica pica	black-billed magpie
Poecile atricapillus	black-capped chickadee
Poecile hudsonicus	boreal chickadee
Poecile cinctus	gray-headed chickadee
Troglodytes troglodytes	winter wren
Certhia americana	brown creeper
Cinclus mexicanus	American dipper
Turdus migratorius	American robin
Ixoreus naevius	varied thrush
Catharus guttata	hermit thrush
Catharus ustulatus	Swainson's thrush
Catharus minimus	gray-cheeked thrush
Myadestes townsendi	Townsend's solitaire
Oenanthe oenanthe	wheatear(s)
Regulus calendula	ruby-crowned kinglet
Phylloscopus borealis	Arctic warbler
Anthus spinoletts	American pipit
Bombycilla garrulus	bohemian waxwing
Lanius excubitor	northern shrike
Vermivora celata	orange-crowned warbler
Dendroica petechia	yellow warbler
Dendroica coronata	yellow-rumped warbler
Dendroica striata	blackpoll warbler
Seiurus noveboracensis	northern waterthrush
Wilsonia pusilla	Wilson's warbler
Euphagus carolinus	rusty blackbird
Pinicola enucleator	pine grosbeak
Leucosticte tephrocotis	gray-crowned rosy finch
Carduelis hornemanni	hoary redpoll
Acanthis flammea	common redpoll
Carduelis pinus	pine siskin
Loxia leucoptera	white-winged crossbill
Junco hyemalis	dark-eyed junco
Passerculus sandwichensis	savanna sparrow
Spizella passerina	chipping sparrow
Melospiza lincolnii	Lincoln's sparrow
Calcarius lapponicus	lapland sparrow, lapland longspur
Calcarius pictus	Smith's longspur

Plectrophenax nivalis	snow bunting
Zonotrichia leucophrys	white-crowned sparrow
Regulus satrapa	golden-crowned kinglet
Spizella arborea	American tree sparrow
Passerella iliaca	fox sparrow
Zonotrichia atricapilla	golden-crowned sparrow
Dendroica petechia	yellow warbler
Dendroica townsendii	Townsend's warbler

Sources: Anonymous. 1979. *Draft Environmental Impact Statement Concerning Installation Utilization for 172nd Infantry Brigade Alaska, at Fort Greely*. Appendix E.

Unpublished Fort Greely data.

APPENDIX 12-5a: Fort Greely GIS Databases

TRI-Service NAME	DESCRIPTION
NATRESOURCE	
famgtare	fauna_habitat (general_habitat_site)
flgenveg	flora_habitat (general_land_vegetation_area) not classified
flmgtfir	flora_management (fire_area)
lfhypelc	landform_hypsography (elevation_contour)
gesursrv	geology_surface (survey_area)
getecflt	geology_tectonic (fault_line)
hyiceare	hydrography_ice_and_snow (ice_area)
hyicecrv	hydrography_ice_and_snow (crevasse_locations)
hysurwbd	hydrography_surface (surface_water_body_area)
hysurwcc	hydrography_surface (surface_water_course_centerline)
hysurwcs	hydrography_surface (surface_water_course_area)
hywetlnd	hydrography_wetland (wetland_area)
sogenunt	soil_general (soil_unit_area)
MASTERPLAN	
bggenexp	buildings_general (structure_existing)
bggentwr	buildings_general (tower)
cddodins	cadastre_dod_property (installation_area)
cdplstwn	cadastre_public_land_survey_system (township_area)
imfdcgag	improvement (water_surface_gaging_station)
imgenfet	improvement_general (improvement_site)
imgengat	improvement_general (gate)
imreccmp	improvement_recreation (campground_point)
imrecmis	improvement_recreation (miscellaneous)
lsgensmn	land_status_general (surface_mine_area)
trairsur	transportation_air (airfield_surface_area)
tricebrg	transportation (ice_bridge)
trvehrcl	transportation_vehicle (road_centerline)
utoilpip	utilities_oil_system (oil_line)
MILITARY	
mlsftsdz	military_safety (surface_danger_zone)
mltngdzn	military_training (drop_zone_area)
mltngfpt	military_training (firing point)
mltnglvf	military_training (live_fire_range_area [aka: firing fans])
mltngobs	military_training (observation_point)
mltngtrg	military_training (training_area)
ENVIRONMENTAL	
ehchagwm	environmental_hazard_char.(groundwater_quality_monitoring_station)
ehchaswm	environmental_hazard_char. (surface_water_quality_station)

APPENDIX 20: Federal Laws, Regulations, Executive Orders, Directives, and Policies

Federal Laws

Americans with Disabilities Act of 1990 (PL 101-336; 42 USC 12101)

- Policy to ensure access, to the maximum extent possible, for persons with disabilities. Notes that wilderness areas are not included under this act. Some provisions are made maintaining historic structures.
- Penalties are enforced under 29 USC 794a dealing with citizen suits.

Antiquities Act of 1906 (PL 59-209; 16 USC 431-433)

- Policy providing for the preservation of historic and prehistoric sites on federal lands. Prohibits taking, excavation, or other destruction of sites.
- Penalties: Misdemeanor charges with fines up to $500 and/or 90 days imprisonment.

Archaeological and Historic (Data) Preservation Act Of 1974 (PL 93-291; 16 USC 469 *et seq.*) (AKA Archeological Recovery Act and Reservoir Salvage Act of 1960) (PL 86-523; 16 USC 469)

- Policy to protect and preserve any historic and archaeological data collected from sites which would otherwise be lost or destroyed as a result of any federally funded or licensed activity or program. Additionally, this act provides that up to one percent of project funds may be appropriated to conduct data recovery.
- No penalties are directly associated with this act.

Archaeological Resources Protection Act of 1979 (PL 96-95:16 USC 470aa-11)

- Policy to prohibit the sale, purchase, exchange, transport or receipt of any archeological resource if that resource was taken from public or Indian lands or in violation of state or local law. Vandalism, alteration, or destruction of historic and prehistoric sites are also covered under this act.
- Penalties - Criminal: Up to $20,000 and/or two years imprisonment, for first offense, $100,000 and/or five years imprisonment for second offense. Civil: Forfeiture of vehicles and equipment used in illegal activities. Forfeiture of illegally obtained artifacts.

Bald and Golden Eagle Protection Act of 1984 (16 USC 668-668d)

- This act prohibits the taking, possession, transaction, and transport of bald and golden eagles. Exemptions may be authorized by the Secretary of the Interior.
- Penalties - Criminal: Fines up to $5,000 and/or one year imprisonment Fines and prison terms doubled for second offense. Civil: Fines up to $5,000 per violation. Loss of federal lease rights, and confiscation of vehicles used in the violation of this law.

Clean Air Act (42 USC 7401-7642)

- Policy to prohibit, limit, and regulate the emission of dangerous and noxious pollutants into the environment.

- -Penalties - Criminal: Up to $250,000 and/or five years imprisonment for first offense. $500,000 and/or 10 years imprisonment for second offense. Corporations are subject to fines up to $500,000 for first offense. Knowing endangerment is punishable by fine under Title 18 and/or 15 years imprisonment for an individual and $1,000,000 for a corporation. Penalties are doubled for second offenses.

Clean Water Act of 1977 (33 USC 1251-1387)

- This act stipulates effluent standards for the discharge of pollutants into navigable waters of the U.S. Promotes research at the federal and state levels concerning issues of water pollution.
- Penalties - Criminal: Negligent violations, fines up to $25,000 per day of violation and/or up to one year imprisonment. Doubled for repeat offenders. Knowledgeable violations, fines up to $50,000 per day of violation and/or up to three years imprisonment. Doubled for repeat offenders. Knowledgeable endangerment, fines up to $230,000 and/or up to 15-year imprisonment. If violator is an organization, fines up to $1,000.000. Doubled for repeat offenders. Civil: Accidental violation, fines up to $50,000. Willful violation, fines up to $250,000. Owners or operators of vessels or facilities may be liable for clean-up costs up to the amount of $30,000,000. Citizen Suits: Any citizen may bring suit against any person, the U.S. government, or governmental agency for violations of this act.

Coastal Zone Management Act (PL 92-583; 16 USC 1451 *et seq*.)

- Policy to preserve, protect, develop, restore, and enhance the nation's coastal zones. Provides funding opportunities to accomplish this goal. Establishes the Walter B. Jones excellence in coastal zone management awards. Also established the National Estuarine Research System.
- No penalties are directly associated with this act.

Comprehensive Environmental Response, Compensation and Liability Act (CERCLA and SARA) of 1980 (42 USC 9601-9675)

- Policy which defines liabilities for damage or destruction of the environment. The DOD can be held liable for releases damaging the environment. Limits on fines do not limit liabilities in regards to actual clean-up costs.
- Penalties - Civil fines up to $5 million for vessels carrying hazardous wastes ($50 million for an incineration vessel). Civil fines up to $30 million for a motor vehicle, aircraft, pipeline, or rolling stock, but no less than $5 million. Civil fines up to $50 million for any facility.

Conservation and Rehabilitation Program on Military and Public Lands (PL 93-452)

- Policy to set up and maintain conservation and rehabilitation programs on military and public lands. The goal is to preserve areas for natural resources. Provides funding and policy guidance for programs. Allows for imposing fines on individuals who violate regulations for land use. $1,000 for hunting and fishing without appropriate permit. $500 for violation of other regulations.

Conservation Programs on Military Installations (AKA Sikes Act) (PL 86-797; 16 USC 670 *et seq*.)

- Policy to develop land areas for habitat improvement and outdoor recreation. Allows for permitting of hunting and control of off-road vehicles. No fines on military reservations.

Emergency Planning and Community-Right-to-Know Act of 1986 (42 USC 11001-11050)

- Policy to inventory and report holdings of hazardous materials. Also, to report releases of hazardous materials within specified time frames. Some limitations on liability of governmental entities.

- Penalties - Criminal: $25,000 per day in violation, up to two years imprisonment. Civil: $25,000 per day in violation. Citizen Suits: Any citizen may bring suit against any person, the U.S. government, or governmental agency for violation of this act.

Emergency Wetlands Resources Act of 1986 (16 USC 3901-3932)

- This act is intended to promote the conservation of wetlands and to comply with international obligations of migratory bird treaties.
- No penalties are associated with this act.

Endangered Species Act of 1973 (PL 93-205; 16 USC 1531-1543)

- Policy to protect any species (fish, wildlife, or plants) listed on the endangered species and the threatened species list from hunting, taking for importation, or exportation to or from the United States. Establishes the endangered and threatened species list.
- Penalties - Criminal: Fines up to $25,000 and/or one year imprisonment. Civil: Fines up to $10,000 for violation of this act. Forfeiture of any fish, wildlife, plants taken and equipment and vehicles used in violation of this act.

Environmental Quality Improvement Act of 1970 (42 USC 4371-4375)

- Establishes the Office of Environmental Quality. This office is tasked with the goal of enhancing environmental quality via research on negative human impacts on the environment. Also, responsible for coordinating various efforts of federal agencies engaged in minimizing the impact of their missions.
- No penalties are associated with this act.

Erosion Protection Act (33 USC 426e-426h)

- Provides funding mechanism for specific erosion protection projects. Each project must he approved by Congress, the Board on Coastal Engineering Research, or by the Chief of Engineers of the U.S. Army.
- No penalties are associated with is act.

Estuary Protection Act of 1968 (PL 90-454; 82 Stat 625; 16 USC 1221)

- Policy to protect, conserve, and restore the nation's valuable estuaries in a manner that adequately and reasonably maintains a balance between the national need for such protection of estuaries and the need for growth and development of these areas.
- No penalties are directly associated with this act.

Federal Facilities Compliance Act of 1992 (USC)

- This act amends the Resource Conservation and Recovery Act (RCRA, 42 USC 6961) so that the FFCA waives sovereign immunity in RCRA cases. The act allows the EPA Administrator to enforce RCRA provisions for violations by federal agencies. Requires annual inspections of federal facilities. All fees or fines assessed against any federal agency must be paid out of that agency's standard appropriation.
- No penalties are directly associated with this act.

Federal Insecticide, Fungicide and Rodenticide Act (7 USC 136-136y)

- Policy and relations pertaining to the usage of pesticides. Dealing mostly with applications, labeling, and banned products. Provides penalties for improper usage.
- Penalties - Criminal: Commercial - Fines up to $25,000 and/or one year imprisonment; Private - Fines up to $1000 and/or 30 days imprisonment. Civil: Commercial - Fines up to $5000; Private - Fines up to $1000.

Federal Land Policy and Management Act (43 USC 1701-1784)

- Policy regarding the management of federal lands.
- No penalties are directly associated with this act.

Federal Water Pollution Control Act (AKA Clean Water Act) (33 USC 1251-1376)

- Policy to protect U.S. water resources from pollution and to find ways to improve conditions. The act provides funding opportunities for research and development of water resources and sets standards and limits for effluent releases into water resources. Includes issues of dredge and fill, hazardous wastes, oil spills, etc.
- Penalties - Criminal: For individuals under negligence, fines range from $2500 - $25,000 per day of violation and/or one year imprisonment. Knowing violation fines range from $5000 - $50,000 per day of violation and/or three years imprisonment. Knowing endangerment fines are up to $250,000 and/or 15 years imprisonment. Fine and prison term are doubled for second offense. For vessels, unknowing violations are $50,000 plus clean-up costs up to $250,000. For vessels, knowing violations are $250,000 plus full clean-up costs. For facilities, fines up to $50 million plus full clean-up costs for knowing violations. Civil: $10,000 per day of violation, injunctions. Citizen suits: Any citizen may bring suit against any person, the U.S. government, or governmental agency for violations of this act.

Federal Water Project Recreation Act to 1965 (PL 89-72; 79 Stat 213; 16 USC 460[1]-12 to 460[1]-21)

- Policy to include recreation and fish and wildlife considerations in any water resources project. Discusses methods of funding.
- No penalties are directly associated with this act.

Fish and Wildlife Conservation Act of 1980 (FL 96-366; 16 USC 2901)

- Policy to promote fish and wildlife conservation. The act provides for funding of conservation programs.
- No penalties are directly associated with this act.

Fish and Wildlife Coordination Act (PL 85-624; 16 USC 661 *et seq*.)

- Policy to elevate the protection of wildlife resources to the status of water resource protection. Provides authority to Secretary of Interior to provide assistance to other agencies, state and local governments, and public and private organizations to develop, stock, rear, and protect all species of wildlife and their habitats. Provides specific protection for Bald and Golden Eagles and for endangered species of fish and wildlife.
- Penalties - Criminal: Fines up to $5000 and/or one year imprisonment. Fines and prison terms are doubled for second offense. Civil: Fines up to $5000 per offense, each violation is considered a second offense.

Forest and Rangeland Renewable Resources Planning Act of 1974 (16 USC 1601 *et seq*.)

- Policy for forest and rangeland management.
- No penalties are directly associated with this act.

Hazardous Materials Transportation Act (42 USC 1801 *et seq*. changed title to 49 USC 1471)

- Policy to restrict the transportation of hazardous materials.
- Penalties - Criminal: Fines up to $25,000 and/or five years imprisonment. Civil: Fines up to $50,000.

Historic Sites Act of 1935 (PL 74-292; 16 USC 461-467)

- Policy to preserve and protect historic and prehistoric properties of national significance. Established the National Historic Landmarks Program and set standards for inclusion of landmarks.
- No penalties are directly associated with this act.

Hunting, Fishing and Trapping on Military Lands [An update of the Military Construction Authorization Act]

- Policy requiring the Department of Defense to comply with fish and game laws of the state or territory in which it is located.
- No penalties are directly associated with this act.

Land and Water Conservation Fund Act of 1963 (PL 88-578; 78 Stat 897; 16 USC 460d, 460[1]4 to 460[1]-11)

- Policy to provide funding for the encouragement of development of land and water-based recreation and to ensure the stability of the recreation areas.
- No penalties are directly associated with this act.

Marine Mammal Protection Act of 1972 (PL 92-522; 16 USC 1361)

- Policy to prohibit the taking or importation of marine mammals and marine mammal products.
- Penalties are enforced under 16 USC 1375

Marine Protection, Research and Sanctuaries Act. (Ocean Dumping Act) as amended (PL 92-532; 33 USC 1401)

- Policy to protect and preserve marine habitats as designated by the Secretary of Commerce as sanctuaries. Restricts activities in sanctuaries.
- No penalties under this act; however, many acts may be punishable under RCRA at $25,000 per day of violation.

Migratory Bird Conservation Act (PL Chpt. 257; 45 Stat 1222; 16 USC 715 *et seq*.)

- Policy to set aside lands for the conservation of migratory birds. Established the Migratory Bird Conservation Commission, which has the mandate to identify and obtain useful lands.
- No penalties are directly associated with this act.

Migratory Bird Treaty Act (PL 65-186; 16 USC 703 *et seq*.)

- Policy to prohibit the taking, possession, and trade of migratory birds, except as permitted by regulations.
- Penalties are enforced under 16 USC 707.

Migratory Game Fish Study Act of 1959 (PL 86-359; 73 Stat 642, as amended; 16 USC 760e)

- Policy to study migratory marine fish of interest to recreational fishing. Provides funding for said study.
- No penalties are directly associated with this act.

Migratory Marine Game Fish Act (PL 86-358; 73 Stat 643; 16 USC 760c-760g)

- Policy that provides funding for various studies of marine game fish.
- No penalties are directly associated with this act.

Mineral Leasing Act of 1920 (30 USC 181 *et seq*.)

- Lays out leasing and prospecting guidelines for coal, phosphate, sodium, potassium, oil, oilshale, gilsanite, and gas on federal lands.
- Penalties for fraudulent leasing: fines up to $500,000 and/or five years imprisonment.

Multiple-Use Sustained Yield Act of 1960 (16 USC 528-531)

- Policy to manage land in concert with the goals of a multiple-use program. Provides funding to support this act.
- No penalties are directly associated with this act.

National Environmental Policy Act (NEPA) of 1969 (as amended, PL 91-190; 42 USC 4321-4347)

- Policy to require federal agencies to consider the environmental impact of actions taken. Mandates a decision-making process to achieve the goal. This act is a procedural and declarative act. For any federal action that is not a Categorical Exclusion, an Environmental Assessment must be made in order to determine if a full Environmental Impact Statement (EIS) must be prepared. The EIS must follow specific guidelines outlined in 50 CFR 1500-1508. The act does not require the federal agency to chose the least environmentally destructive alternative; only that the agency considers the environmental impact and alternatives to the action.
- No penalties are directly associated with this act.

National Historic Preservation Act (NHPA) of 1966 (as amended. PL 89-665; 16 USC 470 *et seq*.)

- Policy to protect and preserve historic and prehistoric objects, structures, sites, and districts which are included in or are eligible for inclusion in the National Register. Establishes the National Register and the Advisory Council on Historic Preservation. This act defines a decision-making process to be followed when planning an action in the vicinity of a historic area. Requires the development of mitigation plans if historic areas will be affected. Provides funding opportunities to achieve the goals of this act.
- No penalties are directly associated with this act.

National Trails System Act of 1968 (16 USC 1241-1249)

- Policy to develop a system of national trails for recreational purposes.
- Penalties are provided for users abusing rules of trails. No penalties for developers or managers of trails.

Noise Control Act of 1972 (PL 92-574, 42 USC 4905)

- Policy giving the EPA the power to regulate and enforce noise level standards for commercial sources. Includes such sources as construction, transportation, motors, and engines. However, the FAA has final authority over aircraft noise.
- Penalties - Criminal: $25,000 per day of violation and/or up to one year imprisonment for the first offense. Fines and prison terms are doubled for second offense.

Outdoor Recreation on Federal Lands (16 USC 4601{1})

- Policy encouraging the development of outdoor recreation activities on federal lands.
- No penalties are directly associated with this act.

Resource Conservation and Recovery Act (RCRA) including the Solid Waste Disposal Act (42 USC 6901-6992, as amended)

- Policy and regulations to reduce and limit the amount of solid wastes entering landfills. Prohibits the open dumping of solid or hazardous wastes and encourages reuse and recycling of solid wastes. Provides funding for programs and projects intended to achieve the goal of this act.
- Penalties - Criminal: Fines up to $25.000 - $50,000 per day of violation and/or one to two years imprisonment. Knowing Endangerment fines up $250,000 and/or five years imprisonment. For organizations, fines up to 1 million dollars. Civil: Fines up to $25.000 per day of violation. Citizen Suits: A person may bring a civil suit against any person, the U.S. government, or agency which is in violation of this act, subject to minor restrictions.

Rivers and Harbors Act of 1899 (33 USC 401 *et seq*.)

- Policy to protect and maintain navigable waterways of rivers and harbors. Restricts certain activities in said areas. Penalties for wrongful deposit of refuse, injury to harbor improvements, and obstruction of navigable waters.
- Penalties - Criminal: Not less than $300 nor more than $2500 and/or not less than 30 days nor more than one year imprisonment.

Safe Drinking Water Act (as amended, 42 USC 300f *et seq*.)

- Policy to protect the potable water resources of the nation. Sets standards for drinking water quality and prohibits various activities in said water resources.
- Penalties - Criminal: Fines up to $50,000 and/or five years imprisonment. Civil: Fines up to $25,000 per day of violation. Citizen Suits: A person may bring suit against any person, U.S. government, or agency for violation of this act.

Salmon and Steelhead Conservation and Enhancement Act of 1980 (PL 96-561; 94 Stat 3275; 16 USC 3301 *et seq*.)

- Policy to enhance the renewable resource of salmon and steelhead fish and to provide the effective management thereof.
- No penalties are directly associated with this act.

Soil and Water Resources Conservation Act of 1977 (16 USC 2001-2009)

- This act requires the development of a national plan to prevent soil and water resources deterioration.
- No penalties are associated with this act.

Surface Resources Use Act of 1955 (30 USC 601, 603, 611 to 615)

- Policy regarding disposal of mineral and vegetative matter on public lands by the United States. Also deals with tide and claim issues. Expands on the Materials Act of 1947.
- No penalties are directly associated with this act.

Timber Sales on Military Lands [An update of the Military Construction Authorization Act] (10 USC 2665)

- Policy regarding the use of funds generated from timber sales on military lands.
- No penalties are directly associated with this act.

Toxic Substances Control Act (TSCA) (as amended, 15 USC 2601-2654)

- Policy to promote an understanding of effects of chemical substances and mixtures on health and the environment. Encourage research in this area, especially by manufacturers. Regulates those chemical substances and mixtures that pose an unreasonable risk of injury to health or the environment.
- Penalties - Criminal: Fines up to $25,000 per day of violation and/or one year imprisonment. Civil: Fines up to $25,000 per violation (each day of continued violation constitutes a separate violation). Citizen Suits: A person may bring a civil suit against any person, the U.S. government, or agency which is in violation of this act.

Water Resources Planning Act and Water Resource Councils Principles and Standards Act of 1965 (PL 89-80; 42 USC 1962 *et seq*.)

- Policy to encourage the conservation, development, and utilization of water and related land resources of the Nation.
- No penalties are directly associated with this act.

Watershed Protection and Flood Prevention Act (PL 92419; 68 Stat 666, as amended & 86 Stat 667; 16 USC 1001)

- Policy of the federal government to work with the states to prevent damages due to erosion/flood water and sediments, so as to improve the quality of the nation's land and water resources.
- No penalties are directly associated with this act.

Wild and Scenic Rivers Act of 1968 (16 USC 1271-1287)

- Policy to protect and preserve the nation's wild and scenic rivers. Sets up the National Wild and Scenic Rivers system and criteria for including rivers in the system. Prohibits licensing or federal funding for water resource projects on rivers in the system.

- No penalties are directly associated with this act.

Federal Regulations

Americans with Disabilities Act Accessibility Guidelines for Buildings and Facilities (Title 36, Part 1191)

Codifies guideline requirements for buildings complying with the Americans with Disabilities Act (ADA). The guidelines are applicable to new design, construction, and alterations of all buildings required to adhere to the ADA. Guidelines are technical specifications regarding such aspects of minimum number of parking spaces, minimum hallway widths, work top levels, etc.

Curation of Federally-Owned and Administered Archaeological Collections (Title 36, CFR, Part 79)

This regulation sets forth standards, procedures and guidelines for federal agencies involved in collecting prehistoric and historic remains and artifacts recovered under the authority of the Antiquities Act, the Reservoir Salvage Act, Section 110 of the National Historic Preservation Act, or the Archaeological Resources Protection Act.

Department of the Interior Supplemental Regulations (for the Archaeological Resources Protection Act of 1979) (Title 43, CFR, Part 7.20) Reserved

Determination of Eligibility for Inclusion in the National Register of Historic Places (Title 36, CFR, part 63)

This regulation was developed to aid federal agencies determine the eligibility of property for inclusion in the National Register. The process is based on EO 11593 and regulations of the Advisory Council on Historic Preservation (36 CFR 800).

Endangered and Threatened Wildlife and Plants (Title 50, CFR, part 17)

This regulation was developed to implement the Endangered Species Act.

Environmental Protection and Enhancement (Title 32, CFR, Part 650)

This regulation defines policies, responsibilities, and procedures for the protection of environmental quality for the Department of the Army in peace time. Discusses water, air, solid waste, hazardous and toxic materials, noise, historic preservation, oil and hazardous substance spills, and environmental pollution prevention.

Interagency Cooperation-Endangered Species Act (Title 50, CFR, Part 402)

This regulation provides guidance for interagency cooperation in the implementation of the Endangered Species Act.

Migratory Bird Permits (Title 50, CFR, Part 21)

Establishes procedures for obtaining permits to take, possess, or transport any migratory birds or nests.

National Register of Historic Places (Title 36, CFR, Part 60)

This regulation defines the National Register of Historic Places. In addition, it sets forth procedures for inclusion of properties on the National Register and describes limitations and benefits of inclusion on the National Register.

Preservation of American Antiquities (Title 43, CFR, Part 3)

This regulation defines the jurisdiction over American antiquities located on various federal lands. Provides a process for permitting the examination, excavation, and gathering of objects of antiquity.

Protection of Archaeological Resources (Title 32, CFR, Part 229)

This regulation establishes standards and procedures for federal land managers dealing with archaeological resources on public or Indian lands in the United States.

Protection of Historic and Cultural Properties (Title 36, CFR, Part 800)

This regulation defines the "106 process" of the National Historic Preservation Act. Seeks to accommodate federal activities while maintaining the historic integrity of properties under the jurisdiction of federal agencies.

Regulations for Implementing the Procedural Provisions of the National Environmental Policy Act (Title 40, CFR, Parts 1500-1508)

Defines procedures for complying with the National Environmental Policy Act.

The Secretary of the Interior's Standards for Historic Preservation (Title 36, CFR, Part 68)

This regulation sets forth standards for preservation requirements of any proposed grant-in-aid project funded through the National Historic Preservation Fund.

Executive Orders (EO)

Environmental Effects Abroad of Major Federal Actions (EO 12114), 4 January 1979.

Essentially extends the requirements of the National Environmental Policy Act, Marine Protection Research and Sanctuaries Act, and the Deepwater Port Act to federal actions outside the United States.

Exotic Organisms (EO 11987) 24 May 1977.

Executive agencies shall restrict the use of federal funds, programs, or authority to export native organisms to foreign lands where such species do not occur naturally.

Federal Compliance with Pollution Control Standards (EO 12088) 13 October 1978.

Places responsibility on the heads of federal agencies for compliance with federal pollution control standards.

Floodplain Management (EO 11988) 24 May 1977, as amended.

Policy enacted to avoid long and short-term negative impacts associated with the occupancy and modification of floodplains and to avoid direct or indirect support of floodplain development.

Intergovernmental Review of Federal Programs (EO 12372) 16 July 1982.

Provides opportunity for state and local governments to consult on federal programs to which they would contribute funding or be affected by such programs.

Prevention, Control and Abatement of Environmental Pollution at Federal Facilities (EO 11752).

Intent to ensure that the federal government,in running its facilities, provides leadership in the protection and enhancement of the quality of water, air, and land resources.

Protection and Enhancement or Environmental Quality (EO 11991).

Amends EO 11514 so as to give the Council on Environmental Quality the power to promulgate procedural regulations regarding the preparation of environmental impact statements and to resolve conflicts between agencies regarding implementation of the National/Environmental Policy Act.

Protection and Enhancement of the Cultural Environment (EO 11593) 13 May 1971.

Protection of Wetlands (EO 11990) 24 May 1977.

Directs each agency to take action to minimize the destruction, loss, or degradation of wetlands.

Use of Off-Road Vehicles on Public Lands (EO 11644), as mended by EO 11989.

Sets forth provisions for allowing the heads of executive agencies to determine the allowable usage of off-road vehicles on federal land with the goal of protecting the areas from overuse.

Department of Defense Directives

Accounting for Production and Sale of Forest Products (DOD Directive 7310.5), 25 January 1988.

Updates policy, prescribes procedures, and assigns responsibilities for DOD reimbursement and for a state's entitlement to a share in net proceeds derived from forest products sold from military installations or facilities.

Archaeological and Historic Resources Management (DOD Directive 4710.1), 21 June 1984.

Directive provides policy, prescribes procedures, and assigns responsibilities for the management of archeological and historical resources located in and on waters and lands under DOD control.

Environmental Effects Abroad of Major Department of Defense Actions (DOD Directive 6050.7), 31 March 1979.

This directive provides policy for the decision-making process of considering environmental effects on actions by the DOD undertaken outside of the United States. Essentially, this directive extends the requirements of NEPA to these situations.

Environmental Effects in the United States of DOD Actions (DOD Directive 6050. I), 30 July 1979.

This directive provides policy that all DOD actions undertaken in the United States will be in compliance with the NEPA mandates.

Natural Resources Management Program (DOD Directive 4700.4), 24 January 1989.

This directive establishes policies and procedures for an integrated program of natural resources management. It stresses multiple-use strategies.

Army Regulations

Environmental Protection and Enhancement (AR 200-1), 23 May 1990.

Regulation deals with environmental protection and enhancement. This regulation covers the following topics: water, air, hazardous materials, solid and hazardous wastes, noise, oil and hazardous substances spills, environmental restoration, asbestos, radon, and other programs.

Environmental Effects of Army Actions (AR 200-2), 23 January 1989.

This regulation sets the policy for the Army to comply with NEPA. Implements the Council on Environmental Quality's regulations, EO 12114, DOD directives 6050.1 and 6050.7.

Historic Preservation (AR 420-40), 15 May 1984.

This regulation provides procedures and responsibilities for the treatment of historic and archeological properties, sites, objects, districts, etc. on Army land. Also provides instructions on locating and treating historic properties in accordance with NHPA. Establishes a method of creating a Historic Preservation Plan.

Museums and Historical Artifacts (AR 870-20), 9 February 1987.

This regulation intends to improve the quality and professionalism of Army museums and the preservation of items contained in Army museums.

Natural Resources — Land, Forest, and Wildlife Management (AR 200-3), 28 February 1995.

This regulation sets the policy and procedures for management of natural resources to ensure the support of the military mission and to ensure conservation, restoration, and appropriate use of renewable resources.